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MAinstreaming Responsible Innovation in European S3

Interregional Comparison of Regional RRI Maturity and Needs

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1 Introduction

The objective of this report is to present the results of the Responsible Research and Innovation (RRI) maturity assessment of the MARIE partner regions and draw some interregional conclusions.

Within MARIE, partners from 8 European regions (Emilia Romagna-IT, Bucharest-Ilfov-RO, Attica-EL, Galicia-ES, Tampere-FI, Southern Ireland-IE, Centre Val de Loire-FR, Schleswig-Holstein-DE) work together to improve regional public policy that supports delivery of RRI to enterprises' product, process and service design, production and distribution. However, not all regions have the same level of maturity in their awareness and implementation of RRI in their public policies on innovation and they certainly do not have the same needs in terms of supporting RRI in their regional context. The RRI Maturity Assessment and Interregional Comparison is a key part of the work performed in MARIE. It was designed and implemented to help partner regions assess their level of RRI maturity and identify their strengths and weaknesses in terms of RRI awareness and implementation.

The RRI Maturity Assessment was performed using a methodology developed by AUEB-RC, which involved the self-assessment of regions in terms of their level of maturity in understanding the RRI concept, the regional conditions / processes affecting RRI and the consideration and inclusion of RRI dimensions / elements in their policies for supporting research and innovation (R&I). The self-assessment featured 12 indicators, representing the five main dimensions of RRI (Public Engagement, Open Access, Ethics, Gender Equality, Science Education) and Governance, and led to the classification of regions in three maturity categories (Modest, Moderate, Substantial).

The interregional comparison of the regional RRI maturity assessment results is presented per RRI dimension and per indicator included in each dimension. For the analysis and synthesis of the regional RRI maturity assessment results, we focused on the identification of common factors and differences among MARIE partner regions, highlighting examples of said commonalities and differences and, where applicable, identifying exceptions and presenting relevant examples.

2 Interregional comparison of regional RRI maturity assessment

2.1 Public Engagement

The Public Engagement dimension of RRI was assessed through the following two indicators:

- PE1: Public perceptions on public involvement in science and technology
- PE2: Formalisation and extent of public involvement in regional science and technology decision-making

PE1 was measured using quantitative national data from Special Eurobarometer 340 (European Commission, 2010) and Special Eurobarometer 401 (European Commission, 2013) and the respective national datasets which included regional data (European Commission, 2014a; 2014b).

In terms of **differences between regional and national perceptions** of public involvement in S&T decision-making, there are considerable differences in two out of the eight MARIE partner regions:

- Schleswig-Holstein, indicating a stronger regional perception of the involvement of the public in S&T decision-making in relation to national data (60% vs. 48% in 2014, 61% vs. 43% in 2010), suggesting a potential trend of stronger public perception towards involvement of public in S&T decision-making in Schleswig-Holstein.
- Tampere (33% vs. 43% in 2014), indicating a weaker regional perception of public involvement in S&T decision-making in relation to national data.

In terms of **comparing regional perceptions of public involvement in S&T decision-making with the EU27 average**, two out of eight MARIE partner regions demonstrate higher regional performance than the EU27 average in 2014:

- Schleswig-Holstein, with 60% vs. 39% in 2014 (61% vs. 29% also in 2010).
- Centre-Val de Loire, with 46% vs. 39%. (34% vs. 29% also in 2010).

A **longitudinal comparison between 2014 and 2010** reveals a considerable increase in the percentage of the population that views positively the consultation of the public and consideration of their opinion in S&T decision-making. This increase is visible in all levels of geographical analysis:

- At EU27 average level, an increase from 29% in 2010 to 39% in 2014.
- At national level, in all countries but one (Finland).
- At regional level, in all regions but two: Tampere (decrease from 43% in 2010 to 33% in 2014), and Schleswig-Holstein (marginal decrease from 61% in 2010 to 60% in 2014).

Indicator PE2 was assessed through self-classification of partner regions in one of four categories: formalised / high involvement, formalised / low involvement, not formalised / high involvement, not formalised / low involvement. The overall result suggests that in most regions have in place formalised processes, or elements thereof, for the involvement of the public in regional S&T decision-making. These are mostly **national public consultation processes** (e.g., consultation / deliberation process with citizens on the development of legislation or regulations in Romania (UEFISCDI, 2018), the OpenGov.gr electronic deliberation process for draft legislation / policy initiatives (Apospori and Tsanos, 2018); regional public consultation processes also exist (e.g., the Regional Economic Social and Environmental Council in Centre-Val de Loire which represents civil society in regional policy-making, the Regional Deliberation Committee in Attica which includes 28 citizens as representatives of civil society) but they are either not currently applicable to S&T decision-making (e.g., the Regional Deliberation Committee in Attica has not received any S&T topics for public deliberation) (Apospori and Tsanos, 2018) or do not explicitly include representatives of the public (e.g., the RESEC in Centre-Val de Loire does not involve civil society in regional S&T decision-making) (DEV'UP, 2018).

2.2 Ethics

The Ethics dimension of RRI in regional R&I policy-making was assessed through the following two indicators:

- E1: Ethical considerations in the evaluation for the regional funding of R&I proposals
- E2: Ethical considerations in monitoring the implementation of regionally funded R&I projects

Ethical considerations are largely not taken into account in the evaluation of R&I proposals for regional funding and/or the monitoring and implementation of regionally funded R&I projects. Only two instances of systematic ethical evaluation of regional R&D projects were identified:

- In Emilia Romagna, regional ethical boards in health-service R&D were introduced in in 2008, which evaluate research on health and drugs conducted within the regional health system However, ethical assessment is limited to this one domain (CISE, 2018).
- In Bucharest-Ilfov, the national law 206/2004 "on good conduct in scientific research, technological development and innovation"1 is considered in the evaluation for the regional funding of R&I proposals and in monitoring regionally funded R&I projects (UEFISCDI, 2018).

From this discussion, it follows that ethical considerations in the regional evaluation of proposals and in regionally-funded project monitoring is still at a low level in the regions investigated.

2.3 Gender Equality

The Gender Equality dimension of RRI in regional R&I policy-making was assessed through the following two indicators:

- GE1: Gender gap of scientific / research personnel
- GE2: Support for gender equality in regionally funded R&I projects

Indicator GE1 was measured using quantitative data from Eurostat and in specific data pertaining to the "Human Resources in Science and Technology (HRST) by category, sex and NUTS 1 regions"[2]. Within this data set, regional data exist for male and female scientific / research personnel for 2017 (named "Scientists / Engineers" and defined as "Those people who work in ISCO-08 groups 21 Science and engineering professionals, 22 Health professionals, 25 Information and communications technology professionals"). The percentile difference in the share of male and female scientists / engineers was estimated per region.

The results show substantial differences in the gender gap of scientists / engineers between partner regions, ranging from -2.97% (i.e., more women than men) in the Northwest of Spain (which includes Galicia) and 3.80% in Ireland (which includes Southern Ireland) to 42.80% in continental Finland. While the EU27 average is 18.93% only three out of the eight examined regions (Galicia with -2.97%, Southern Ireland with 3.80%, Centre-Val de Loire with 13.47%) seem to perform better.

[1] http://www2.rosa.ro/images/Documente/Acte_Normative/LegeaNr.206_2004.pdf
[2] http://ec.europa.eu/eurostat/web/science-technology-innovation/data/database (last accessed 28/04/2018)

Indicator GE2 was assessed through a qualitative discussion (based on desk research) and self-classification of partners' performance as modest, moderate or substantial. Two regions were classified as "substantial" (or close to that) in terms of their performance in indicator GE2:

- Schleswig-Holstein is self-classified as having a substantial level of maturity in terms of this indicator. An analysis of 94 regional innovation projects from the gender perspective has shown that 88 have a positive evaluation (i.e., contribute to the creation of RDI jobs that employ women) and 6 have a neutral evaluation (Ministry of Economic Affairs, Employment, Transport and Technology Schleswig-Holstein, 2018).
- Tampere is self-classified between moderate and substantial; 38.5% of regionally funded R&I projects support gender equality by creating RDI jobs that employ women (University of Tampere, 2018).

Three regions (Bucharest-Ilfov, Centre-Val de Loire, Southern Ireland) are classified as "moderate" in terms of their performance in indicator GE2:

- In Bucharest-Ilfov (UEFISCDI, 2018), rules for project calls under the National Plan for RDI III (2015-2020) are strongly oriented towards assuring gender equality, including provisions on promoting gender equality both in the application and implementation phases.
- In Centre-Val de Loire (DEV'UP, 2018), the percentage of female ownership of innovative companies funded by regional funds and involvement in R&D teams is in the 20-40% range.
- In Southern Ireland, female research award holders constitute 28% of total award holders in 2017. Also, numerous national initiatives for addressing underrepresentation of women in research exist (e.g. Irish Gender Strategy & Action Plan 2013 – 2020, GENDER-NET project).

Three regions show a modest performance in this indicator:

- Attica reports that in the local RIS3 no reference to measures / policies for promoting gender equality in regionally funded R&I projects (Apospori and Tsanos, 2018).
- In Emilia Romagna, 7% of funded projects from the Emilia-Romagna Regional Operational Programme concern women's business and have led to the employment of female researchers in the ratio of 15% of total employed researchers (CISE, 2018).
- In Galicia, a qualitative self-assessment reveals that positive discrimination for women in project selection criteria exists in only 2 out of 9 programmes funded by the RIS3 of Galicia and to a very limited extent (Andres Faiña et al, 2018).

2.4 Science Education

The Science Education dimension of RRI in regional R&I policy-making was assessed through the following two indicators, both of which were measured through partners' qualitative self-assessment:

- SE1: Inclusion of RRI-related training requirements in regional R&I strategy and projects
- SE2: Capacity building for RRI-related training (existence, percentage of funds allocated)

The assessment of indicator SE1 reveals that no specific formalisation exist in any of the partner regions R&I policies. Traces of relevant provisions / measures may exist at national level, e.g., a trend towards RRI principles focusing on public engagement, open innovation etc. in regional R&I policies in Romania (UEFISCDI, 2018), or at regional level, e.g., measures in the Attica RIS3 on support, training, education, capacity-building and networking of personnel staffing innovation support structures (Apospori and Tsanos, 2018).

With respect to indicator SE2, the results show that, overall, capacity building activities for regional RRI-related training and dissemination are not organised by regional administrations. However, RRI-related events are organised by other regional stakeholders, such as "Corporate Responsibility Days" at the University of Tampere and European Robotics Forum 2018 (University of Tampere, 2018) and the "RRI Workshop" organised in Bucharest-Ilfov region by the public Institute for Microtechnologies in 2016 (UEFISCDI, 2018).

2.5 Open Access

The Open Access dimension of RRI in regional R&I policy-making was assessed through the following two indicators, both of which were measured through a qualitative self-assessment by the partners:

- OA1: Regional policies for dissemination of and open access to scientific, technical and economic information
- OA2: Inclusion of open access / open science measures in research policies and calls for proposals

For indicator OA1, the overall finding is that all regional policies on R&I have in place provisions on open access to scientific, technical and economic information, but at different levels of maturity. For example, while the Region of Attica does not have a regional policy for open access to R&I, there exists an agreement between the region and the Hellenic Open Technologies Alliance (EL/LAK) to "design, develop and promote openness" in education, public administration and business in the region (Apospori and Tsanos, 2018). On the other hand, Tampere region (University of Tampere, 2018) suggests a substantial level of maturity in open access and open innovation through e.g., initiatives involving cooperation between different cities (Six City Strategy – 6aika).

For indicator SE2, again the level of maturity varies substantially between partner regions. Only Tampere region suggests a substantial level of maturity as every regional funding call includes elements of open science/open innovation requirements (University of Tampere, 2018). In the other regions, no provisions on the inclusion of open access / open science measures in regional research policies and calls for proposals exist; only in Emilia Romagna is an open innovation mechanism in the regional R&I policy currently being discussed but is not yet implemented (CISE, 2018).

2.6 Governance

The Governance dimension of RRI in regional R&I policy-making was assessed through the following two indicators, both of which were measured through a qualitative self-assessment by the partners:

- G1: Extent of R&I networks (e.g. platforms, hubs, incubators, accelerators) promoting / supporting RRI in the region
- G2: Activities of funders to promote RRI at regional level

For indicator G1, the overall finding is that, while R&I networks explicitly supporting RRI do not exist at regional level, the regional innovation ecosystems comprise innovation networks (such as innovation platforms, hubs, accelerators) that may promote RRI principles. For example:

- Attica has a substantial number of private / public R&I networks, in the form of innovation clusters, hubs, incubators, accelerators and numerous less formal initiatives aiming to support the growing start-up / innovation community (Apospori and Tsanos, 2018).
- Centre-Val de Loire has in place several clusters (e.g., Nekoé cluster, CRESS Centre) and actors supporting RRI but not entirely dedicated to it (DEV'UP, 2018).
- The regional high-tech network in Emilia Romagna (Romagna INNOVAzione) promotes initiatives and funds projects aiming to foster R&I in the fields of sustainable development, circular economy and societal concerns, which are directly relevant to RRI (CISE, 2018).

One exception to this general finding is Tampere (University of Tampere, 2018), which is characterised both by a high number of networks and a high formal and informal involvement of regional authorities in these networks. The region has a long tradition in establishing Open Innovation Platforms, such as Health HUB (promoting RRI in medial industry), Demola (with a strong component of open access, as well as science education and equality), Inno-Oppiva (with strong emphasis on ethics and science education) or Koklaamo (with a strong involvement of citizens).

With respect to indicator G2, it appears that throughout the examined MARIE partner regions the quantity of funding mechanisms to support RRI-specific initiatives are modest. Only one specific regional funding mechanism to promote RRI at regional level has been identified; in the Centre-Val de Loire region, "Centre Actif" is a regional mechanism providing economic incentives and financing to social and solidarity companies and initiatives (DEV'UP, 2018).

2.7 Overall level of regional RRI maturity

Based on the discussion and self-assessment of the 12 RRI maturity indicators, the RRI maturity assessment results of the MARIE partner regions are presented in Table 2-1.

Regions / RRI Maturity Indicators		Emilia-Romagna (IT)	Bucharest-Ilfov (RO)	Attica (EL)	Galicia (ES)	Tampere (FI)	Southern Ireland (IE)	Centre-Val de Loire (FR)	Schleswig-Holstein (DE)
Public Engagement	PE1	Modest	Modest	Moderate	Modest	Substantial	Modest	Moderate	Modest
	PE2	Modest	Modest	Moderate	Moderate / Modest	Moderate	Modest	Moderate	Modest
Ethics	E1	Moderate	Substantial	Modest	Modest	Modest	Modest	Modest	Substantial
	E2	Modest	Substantial	Modest	Modest	Modest	Modest	Modest	Substantial
Gender Equality	GE1	Modest	Moderate	Modest	Modest	Modest	Substantial	Moderate	Substantial / Moderate
	GE2	Modest	Moderate	Modest	Modest	Moderate	Moderate	Moderate	Substantial
Science Education	SE1	Moderate	Moderate	Modest	Modest	Moderate	Moderate	Modest	Modest
	SE2	Moderate	Modest	Modest	Modest	Substantial	Moderate	Modest	Modest
Open Access	OA1	Substantial	Modest	Modest	Substantial / Moderate	Substantial	Moderate	Modest	Substantial
	OA2	Modest	Modest	Modest	Modest	Substantial	Moderate	Modest	Moderate
Governance	G1	Moderate	Modest	Moderate	Modest	Substantial	Moderate	Modest	Modest
	G2	Modest	Modest	Modest	Modest	Moderate	Modest	Modest	Modest
Overall Regional RRI Maturity Level		Modest	Modest	Modest	Modest	Moderate / Substantial	Moderate	Modest	Moderate / Modest

Table 2-1: Results of regional RRI maturity assessment per partner

The above results demonstrate an overall modest level of maturity for 5 out of 8 regions (Emilia Romagna, Bucharest-Ilfov, Attica, Galicia, Centre-Val de Loire), with moderate and/or substantial performance in individual dimensions of RRI, a moderate/modest level of maturity for 1 region (Schleswig-Holstein), a moderate level for 1 region (Southern Ireland) and a moderate/substantial level of maturity, with a consistency in higher performance in the majority of RRI dimensions, for 1 region (Tampere).

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