

# A Monitoring Framework for Responsible Research and Innovation (RRI)

## Briefing Paper



### About SUPER MoRRI

SUPER MoRRI is a five year research and innovation action (RIA) funded under the H2020 Framework Programme of the European Commission. The Project task is to develop a systematic approach to monitoring the evolution and benefits of RRI. SUPER MoRRI is coordinated by Dr. Ralf Lindner from Fraunhofer ISI in Karlsruhe ([www.super-morri.eu](http://www.super-morri.eu)).

### Purpose of this Briefing Paper

Responsible approaches and practices are expanding in research and innovation. The development of a data and analysis framework to monitor and support this expansion seems timely. This Briefing Paper provides an overview of the initial approach to monitoring RRI foreseen in SUPER MoRRI. However, its main purpose is as a starting point for debate and discussion among interested stakeholders<sup>1</sup> that will contribute to the design and development of the monitoring framework.

### Moving on from MoRRI

A special characteristic of SUPER MoRRI is that it includes a significant ‘legacy’ component from the prior MoRRI project. Key outcomes of MoRRI included:

- The specification of 36 ‘RRI indicators’, distributed across six ‘key areas’;
- The empirical identification of eleven RRI dimensions, based on 25 of these indicators;
- Analytical clustering of Member States (MS) into four groups, based on similarities and differences between individual countries on the eleven RRI dimensions;
- Scientists’ strong perception that RRI is beneficial for both science and society in multiple ways; and
- The recognition of organisations as key to the implementation of RRI and therefore the importance of meso-level data and metrics for future monitoring purposes.<sup>2</sup>

Whilst moving RRI monitoring into a new era is the key task of SUPER MoRRI, an important sub-task will be to produce periodic RRI Monitoring Reports as initiated by MoRRI. However, the R&I and policy contexts for RRI have also evolved since the MoRRI project was conceived. SUPER MoRRI will thus critically assess the outputs of the MoRRI project, taking forward those metrics and indicators which satisfy a range of quality, relevance and utility criteria. The elements of MoRRI that transition to the new framework will provide a valuable dimension of continuity between the past and future of RRI monitoring.

<sup>1</sup> The Briefing Paper will be one of the main background materials for the SUPER MoRRI Stakeholder Workshop to be held in Brussels on September 10, 2019. See [www.super-morri.eu](http://www.super-morri.eu) for details.

<sup>2</sup> See the Executive Summary of the MoRRI project Final Report: <https://morri.netlify.com/reports/2018-05-24-final-report-summarising-insights-from-the-morri-project>

### **Linking our understanding of RRI to our expectations for monitoring**

Developing a framework for monitoring RRI starts from how we understand the need for RRI. RRI can be understood, on the one hand, as a necessary corrective to the myriad unintended negative consequences of science and technology (S&T) evident in our world. On the other hand, RRI can be understood as the necessary effort of informing, educating and involving citizens, with the goal of unleashing the potential for enhanced social and economic futures that is the promise of S&T. Somewhere in between these two perspectives, RRI can be understood as a process – characterized by uncertainty, complexity and contestation – that is principally concerned with aligning science and society (Strand & Rommetveit 2019).

The first understanding of RRI draws monitoring attention toward governance and ethics, whilst the second points toward monitoring of engagement and education. The third understanding promotes a more participatory and inclusive approach to governance and more diverse contributions to the social shaping of S&T as an impetus for monitoring. The recognition of plurality, uncertainty and complexity undermines expectations that a single perspective or uniform level of analysis could be sufficient. Rather a reflexive, versatile and supportive approach to monitoring is invited. SUPER MoRRI views these challenges as requiring both conceptual innovation and empirical experimentation.

### **Why monitor RRI?**

Data and information systems are an important support to policy. Research and innovation (R&I) is understood to be an incredibly complex domain for policymaking, in which causal effects of interventions are very difficult to discern and the relationship with outcomes is uncertain. Indicators are a vital element of (imperfect) efforts to inform policymakers and stakeholders about these effects and outcomes to the greatest extent possible.

Indicators can have varying uses and play different roles at various points in the policy cycle including agenda setting, policy formulation, implementation, and evaluation:

- To map an initial set of conditions or circumstances;
- As inputs for transforming objectives or missions into specific goals or targets;
- To trace changes in conditions or circumstances;
- To assist stakeholders to reflect on, and potentially adapt, the form of an intervention and/or the values attached to its goals and intended outcomes;
- As vehicles which transmit particular policy visions or socio-technical imaginaries;
- As tools to promote stakeholder learning, including through benchmarking; and
- To facilitate transparency and a shared vision that builds and reinforces trust and collaboration among stakeholders, including policymakers and citizens (Lehtonen 2017; Kleibrink et al. 2016).

The choice of indicators to refer to, and how these are interpreted, will depend on the perspectives of different stakeholders, their policy motivations and socio-economic interests.

Prior efforts to monitor RRI have centred on mapping RRI-related activities and relevant system characteristics. However, there are likely to be significant unmet needs among policy-oriented and other stakeholders in RRI. For example, research managers in universities and

other research performing organisations (RPOs), research funding organisations (RFOs) and civil society organisations can be expected to see different areas of potential value in an upgraded RRI monitoring framework.

In addition, although there remains widespread support for RRI amongst key stakeholders, the policy context for RRI in Europe is somewhat in flux (Mejlgaard et al. 2018). It thus seems advisable that the monitoring framework is designed to support multiple purposes, a variety of stakeholders and diverse policy needs. SUPER MoRRI therefore wishes to understand the interests, priorities and burning questions that motivate different stakeholders to be better informed about RRI.

*Discussion questions 1: Why is monitoring RRI important for your organisation or role? From your perspective, what transformations in policy and practice do you view as essential to advance responsibility in R&I?*

### **What data and information should RRI monitoring prioritise?**

Closely related to questions about why monitoring can be important for different stakeholders, are questions about what to monitor that can provide relevant and timely information. These questions are not limited to identifying what can be feasibly monitored. They also involve discussions about what it is appropriate to monitor and how this can be done responsibly.

Prior efforts to create indicators for RRI focused on pre-defined key areas (Peter et al. 2019). A number of MoRRI indicators were drawn from existing monitoring frameworks for R&I, including Eurostat and *SheFigures*<sup>3</sup>. SUPER MorRI intends to continue with elements of this approach.

SUPER MoRRI is also dedicated to exploring new monitoring dimensions and approaches that can support RRI and its stakeholders.

Certain contemporary currents in R&I policy and practice appear highly relevant in this regard. For example, current efforts to make European science more ‘open’ have advanced principles and recommended practices that concern RRI stakeholders. Points of reference include the *Next Generation Metrics for Open Science* report (Wilsdon et al. 2017), the Open Science Policy Platform recommendations on indicators (Hormia-Putananen et al. 2017), and the work of the Expert Group on Indicators for Researchers’ Engagement with Open Science on fostering open knowledge practices.

Past and current SwafS projects have built a community of practitioners and experts who have accumulated deep and broad experience of RRI implementation. This community could both contribute to, and benefit from, an improved knowledge base regarding areas of progress in implementation progress and where barriers continue to exist.

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<sup>3</sup> First published in 2003, *She Figures* compiles MS data on women in R&I, including tracking women’s participation in science and technology, their research career progress and participation in decision-making, and R&I outputs. The most recent edition (2019) includes innovative new metrics for the ‘gender content of research’.

The planned science and society Eurobarometer 2020 also has the potential to provide relevant current information on citizens' awareness of and attitudes toward S&T issues that are likely to be of interest to a variety of RRI stakeholders.

SUPER MoRRI is interested to learn what data collections and indicators stakeholders consider to be priorities from their various perspectives.

*Discussion questions 2: What challenges, policies or questions are you most concerned to be better informed about in relation to RRI? What data and information would be a priority for your organisation or role? For the RRI stakeholder community as a whole?*

### **Responsible monitoring of RRI**

A critical current within science and research policy in recent years has advocated the responsible design and use of metrics and indicators. *The Metric Tide* (Wilsdon et al. 2015) and *The Leiden Manifesto* (Hicks et al. 2015), for example, describe general principles and practical approaches for working with indicators in an appropriate and responsible manner. Metrics and the calculation of indicators should be transparent and those data on which they are based should be treated according to FAIR data principles<sup>4</sup>.

These and other resources will support a reflexive approach to metric and indicator development in SUPER MoRRI. SUPER MoRRI may also wish to develop guidelines regarding responsible uses of indicators it develops.

Indicators can also be contextualised in relevant complementary information that encourages appropriate comparisons. For example, the European Tertiary Education Register (ETER)<sup>5</sup> database includes data for multiple variables characterising European universities. ETER could be used to construct profiles that support appropriate comparisons, such as between similar-sized organisations or those with similar research missions. Such an approach should provide greater functionality for users interested in different levels of data aggregation and more options for making context-sensitive comparisons.

SUPER MoRRI wants to know how best to support stakeholders in the responsible use of indicators.

*Discussion questions 3: What comparative dimensions would help your organisation or role to make use of RRI indicators? Should indicators be accompanied by descriptions of appropriate models for their interpretation? What principles or resources to advance responsible use are most important from your perspective?*

<sup>4</sup> <https://www.force11.org/group/fairgroup/fairprinciples>

<sup>5</sup> <https://eter-project.com/#/home>

**Figure 1: Towards a monitoring framework for Responsible Research and Innovation**

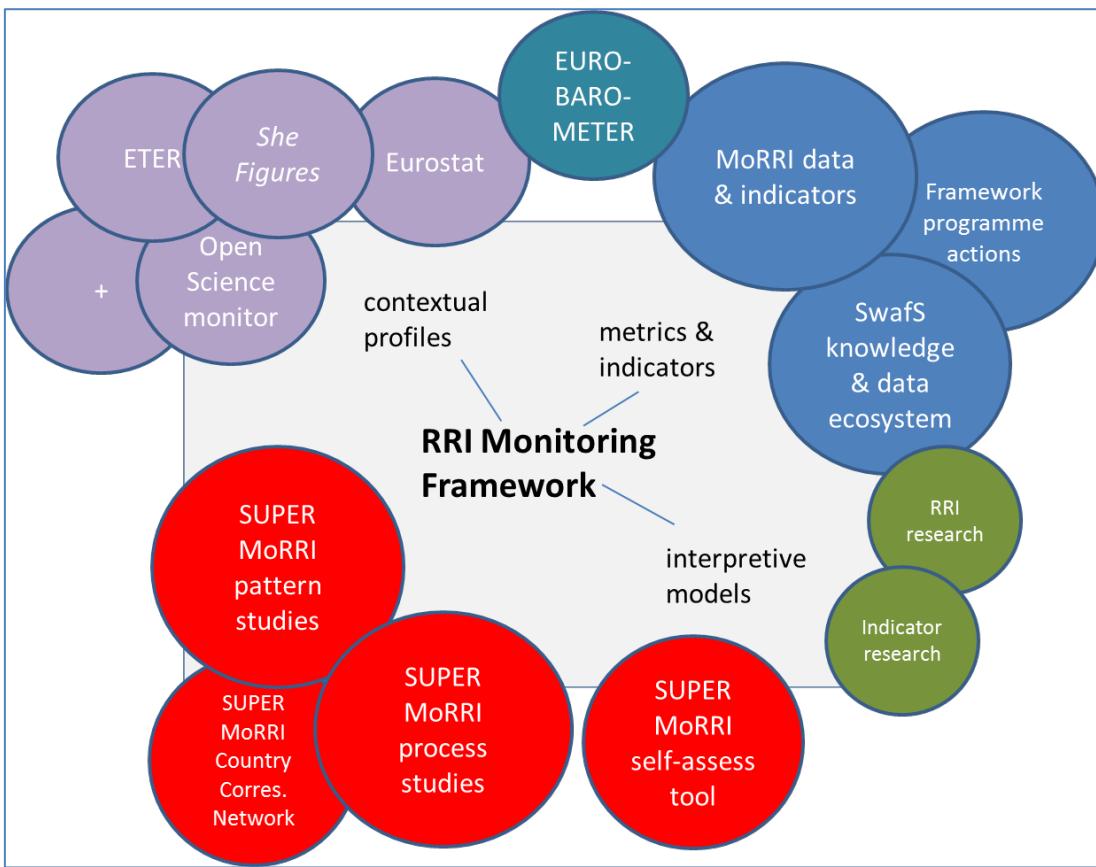


Figure 1 provides an initial summary of potential elements contributing to a framework for monitoring RRI. Those highlighted in red are the planned research activities of SUPER MoRRI, which are expected to deliver new data and indicators about patterns and processes of RRI implementation, including with an international dimension beyond Europe. The green elements represent state-of-the-art research in RRI and in indicator design, which will contribute to the conceptual and technical development of the monitoring framework. The blue elements represent European research programmes and projects, including current Science with and for Society (SwafS) actions, which will contribute data and insights from the established and expanding knowledge base for RRI. Finally, purple and teal elements represent selected existing and future secondary data collections, which will provide both data for indicators and contextual information that can be used to enhance the interpretability of indicators for users of the monitoring framework.

The SUPER MoRRI consortium welcomes responses to this Briefing Paper.

Comments can be emailed to [info@super-morri.eu](mailto:info@super-morri.eu)



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