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OPEN LETTER

REVISED Linking policy and practice in monitoring socially responsible research and innovation (RRI): A conceptual framework to evaluate progress through the UNESCO-led Recommendation on Science and Scientific Researchers

[version 2; peer review: 2 approved, 1 approved with reservations, 3 not approved]

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Abstract

This paper sets out a high-level conceptual framework for monitoring the development of socially responsible research and innovation (RRI) systems linked to the global policy instrument called 'the Recommendation on Science and Scientific Researchers' (RSSR). RRI is an umbrella concept, rooted in EU policy and research, that encompasses a range of topics that overlap directly with the RSSR. These topics include social inclusion in scientific research, improved scientific transparency and governance and expanded public engagement with science. The RSSR is an international accord ratified by 195 United Nations Educational Scientific and Cultural Organization (UNESCO) Member States in 2017, updating an earlier version of the instrument. This UNESCO-led initiative offers a globally inclusive and agreed structure for advancing RRI-related principles. A key feature of the RSSR initiative is its permanent structure of quadrennial monitoring to assess implementation of its principles. Here, a conceptual framework is presented to clarify the specific dimensions of RRI embedded in the 10 key priority areas for this quadrennial monitoring process. The paper explicates these dimensions and the underpinning policy language from the 2017 recommendation with the aim of supporting UNESCO Member States and research stakeholders globally to design appropriate evaluation methods. This conceptual framework is intended to support development of globally aligned measurement of RRI policy and practice that allows research and policy stakeholders from each world region to learn from each other. Fostering mutual learning on a global scale will help to enable evidence-based practice in the context of RRI to improve outcomes and mitigate the limitations of well-meaning but ineffective policies and practices.

Open Peer Review

Approval Status ✗ ✓ ? ✓ ✗ ✗

	1	2	3	4	5	6
version 2 (revision) 24 Jul 2023				✓ view	✗ view	✗ view
version 1 14 Feb 2022	✗ view	✓ view	? view			

1. **Justus Wesseler**, Wageningen University, Wageningen, The Netherlands
2. **Kutoma Wakunuma**, De Montfort University, Leicester, UK
3. **Raul Tabares**, Basque Research and Technology Alliance (BRTA), Derio, Spain
4. **Steven Umbrello**, University of Turin, Turin, Italy
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Keywords
RRI, socially responsible science, researchers, scientists, indicators, evaluation

Any reports and responses or comments on the article can be found at the end of the article.

This article is included in the Research on Research gateway.

This article is included in the Horizon 2020 gateway.

Corresponding author: Eric Allen Jensen (jensen@gatesscholar.org)

Author roles: Jensen EA: Conceptualization, Investigation, Methodology, Project Administration, Writing – Original Draft Preparation, Writing – Review & Editing

Competing interests: Prof. Eric A. Jensen has worked as a consultant and trainer for UNESCO relating to the 2017 Recommendation on Science and Scientific Researchers in a number of projects. He authored the global report for the UNESCO Recommendation on Science & Scientific Researchers 2021 monitoring, analyzing and synthesizing national reports submitted from all over the world and preparing a report with recommendations for the UNESCO Executive Board. Jensen was also lead author of national monitoring reports on the state of science submitted to UNESCO for the quadrennial monitoring of the Recommendation on Science & Scientific Researchers for three UNESCO Member States. Jensen was an invited expert trainer for Arab UNESCO Member States on monitoring and evaluation of science systems. Jensen designed and published an indicators framework for the UNESCO Recommendation on Science & Scientific Researchers in collaboration with UNESCO permanent staff, as well as leading an initiative conducted with UNESCO by the Institute for Methods Innovation to pilot and improve these indicators working in collaboration with several UNESCO Member States.

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REVISED **Amendments from Version 1**

There were two reviews containing critical comments. The first raised concerns (1) about structure, saying 'the reader receives almost no information about what the monitoring framework is about. This needs to be added to the main body of the text... The key aspects of the framework one would expect in the main body of the text.' This was how I initially structured the paper but ORE editorial staff required me to remove the bulk of the framework content and move it into the supplemental material. So no change can be made here. (2) 'The introduction should be shortened to about a quarter of the text'. [similar point mentioned by the second critical reviewer] I have introduced an additional heading to achieve this by splitting up the section currently titled 'Introduction'. (3) 'The conclusion restates what has been written in the introduction. Redundancies need to be removed.' [also mentioned by the second critical reviewer] I have done this. (4) The last paragraph talks about ecosystem research and COVID-19. As a reader, I got lost. This had not been mentioned before, why now?'. [also mentioned by the second critical reviewer] I have removed and replaced this content.

The second reviewer that provided critical comments noted some overlapping issues: (1) "It is important to frame the 'RRI discourse' on the text and to illustrate which synergies with RSSR have." This has now been done in the introduction. (2) "Section three will benefit from a further clarification about the 'supporting function' that this document has." This has been done in the conclusion now. (3) "The text will benefit from 'citation diversity'. Especially for situating the concept of RRI into the text and helping to the reader to understand the synergies between RRI and RSSR." Additional citations added as suggested.

Any further responses from the reviewers can be found at the end of the article

Disclaimer

The views expressed in this article are those of the author. Publication in on Open Research Europe does not imply endorsement by the European Commission.

Introduction

The present text puts forward an overarching conceptual framework to support monitoring of an international accord adopted by 195 governments, representing a global commitment to socially responsible research and innovation (RRI). This accord sets out a wide range of principles for regulatory action on RRI, explicitly committing governments to take pro-RRI actions. The UN-organized accord is called the 'Recommendation on science and scientific researchers (2017)' (RSSR) (UNESCO, 2017). This paper aims to bolster the RSSR's role as a global vehicle for RRI by providing a conceptual framework for its associated quadrennial monitoring process.

RRI is an umbrella concept rooted in EU policy and research, that encompasses a range of topics that overlap directly with the RSSR (Gerber *et al.*, 2020). These topics include social inclusion in scientific research, improved scientific transparency and governance and expanded public engagement with science. The paper explicates the dimensions of the RSSR that have been identified as priorities for measurement by the United Nations Educational Scientific and Cultural Organization (UNESCO), and the underpinning policy language from the 2017 recommendation. This elaboration of the existing guidance from UNESCO for the monitoring process is aimed at supporting UNESCO Member States and research stakeholders globally to design appropriate evaluation methods. This is because good evaluation methods require clear elaboration of the outcomes that are being targeted for measurement (Jensen, 2014; Jensen & Laurie, 2016). Such evaluation can lay the foundations for long-term international mutual learning at the level of best practices in RRI advancement and evaluation, linked to the RSSR's quadrennial cycle of stakeholder consultation, monitoring, and reflection at the national level. This monitoring process (UNESCO, 2021) is a legal expectation for each UNESCO Member State to provide national reporting on progress towards the RSSR's full implementation with appropriate substantiation, along the same lines as other UN conventions (UNESCO, n.d.). Indeed, having comparable assessments conducted across countries and time can be highly useful for policymakers as they consider the common global standards embedded in the RSSR, along with analysis of local research and innovation policies and practices that can deliver on those standards.

Context for conceptual framework

This conceptual framework is aimed at supporting each government and scientific community across the UNESCO Member States to take necessary actions for effective evaluation and reporting on RRI dimensions during their ongoing engagement with this quadrennial process. The tone and structure of this open letter is designed to be helpful to these research and policy stakeholders as they come to grips with the RSSR and its monitoring process. To aid the process of measuring progress in addressing the different dimensions included in the RSSR, this paper provides a conceptual framework with a detailed identification of the specific elements of the 10 key priority areas for monitoring the RSSR. The 10 priority areas that have been identified by UNESCO and confirmed by Member States in the UNESCO Executive Board in March 2020[1] (UNESCO, 2020) as the initial focus for RSSR implementation and monitoring are outlined in Table 1. The specifics of how this set of 10 key priority areas was initially fashioned have not been publicized by UNESCO beyond indicating that the goal was to achieve simplification to ease the burden of the monitoring process.

This open letter takes these confirmed key priority areas for the RSSR as a starting point and uses a close reading of the original RSSR to break each priority area down into its component dimensions to clarify where measurement is needed to feed into the long-term monitoring process for the RSSR (see supplemental materials for details). To further guide UNESCO Member States and research stakeholders in their

[1]This document is available from the Executive Board documents following the reference link on the UNESCO site, listed under the 209th session – 2020, 209 EX Main Series.

Table 1. 10 key priority areas identified by UNESCO and confirmed by Member States as the initial focus for RSSR implementation and monitoring. (UNESCO, 2017).

1. Responsibility of science towards the United Nations' ideals of human dignity, progress, justice, peace, welfare of humankind, and respect for the environment.
2. Need for science to meaningfully interact with society and *vice versa*.
3. Role of science in national policy and decision- making, international cooperation, and development.
4. Promotion of science as a common good.
5. Inclusive and non-discriminatory work conditions and access to education and employment in science.
6. Any scientific conduct is subject to universal human rights standards.
7. Balancing the freedoms, rights, and responsibilities of researchers.
8. Scientific integrity and ethical codes of conduct for science and research and their technical applications.
9. Importance of human capital for a sound and responsible science system.
10. Role of Member States in creating an enabling environment for science and research.

consideration of relevant evaluation measures and indicators, guidance notes, and direct quotations from the RSSR are included in grey font in the full framework document (see underlying data: Jensen, 2021). These notes are focused on dimensions where relevant measurement options may be more ambiguous or needing elaboration to identify the relevant aspects to target for RSSR reporting. This presentation of the 10 key priority areas for RSSR implementation and monitoring uses verbatim language from UNESCO policy documents extensively to provide assurance of the alignment of the conceptual framework to the underpinning policy instrument. The conceptual framework presented is one of a series of publications intended to guide UNESCO Member States through the process of evaluating RRI progress in science systems (Jensen, 2020). This evaluation process is required by the RSSR, but the specifics of how to assess and improve the socially responsibility of science systems in line with this policy instrument are not spelled out by UNESCO or the UNESCO Executive Board. This means that many countries' representatives are left without detailed advice about how to interpret, implement, and evaluate the RSSR in their national systems. In part, this ambiguity is by design because it allows for context-appropriate adaptation of general RRI principles. Indeed, national governments are encouraged, but not required, to convene 'working groups' to provide diverse stakeholder voices, including representatives from scientific bodies, industry, citizen groups, etc., for this process of adaptation. However, greater elaboration and clarification of the components of the monitoring framework can streamline the initial steps of coming to grips with the policy and its dimensions, thus improving the experience for national governments and boosting the value of the monitoring exercise.

Development of the conceptual framework

The conceptual framework presented in this paper was developed during the responsible research and innovation networked globally (RRING) (rring.eu) project to guide the project's work in conducting three national case studies in South Africa, Lithuania, and Serbia focusing on the monitoring process for the RSSR. UNESCO was a formal partner in this research and innovation action, and its lead representative on the project, April Tash, provided critical feedback during the development and application of the conceptual framework in South Africa, Lithuania, and Serbia from approximately June 2020 until April 2021. A range of global studies on RRI undertaken during this period under the auspices of the RRING project (e.g., see Foulds *et al.*, 2023) highlighted the strong overlap between RRI as a concept and the RSSR as a live policy document with broad-based support.

The framework was constructed based on a close reading of the RSSR full policy text (UNESCO, 2017) and the distilled 10 key priority areas, with the aim of establishing a robust conceptual foundation for identifying relevant sources of evidence to include in formal UNESCO Member State quadrennial reporting against the RSSR. The framework was developed by the author of this open letter by applying logical deduction, separating out the elements of compound sentences to add clarity, noting cross-referencing in UNESCO policy documentation where available, and matching the language and intentions of the key priority areas with details in the RSSR full policy text. Ultimately, this framework is built on logical argumentation, with full transparency to allow others to come to different conclusions or considerations about the linkages between the two documents. The review and implementation process did not result in significant changes to the framework.

This policy analysis document integrates these two distinct documents, with the aim of clarifying for Member States how the full policy text can be linked directly to each aspect of the 10 key priority areas. Development of this conceptual framework was prompted by feedback from the aforementioned national case studies that the 10 key priority areas on their own were not sufficiently elaborated to clarify which kinds of evidence where relevant for which key priority area.

Using this conceptual framework

While this open letter may be relevant to anyone interested in evaluating RRI on a global scale or the RSSR policy instrument,

its specific audience is UNESCO Member States and the working groups they convene to deliver expert input into the long-term RSSR monitoring and reporting processes. In particular, UNESCO Member State government representatives and working groups are encouraged to consider the categories indicated in the framework (Jensen, 2021) to self-assess the comprehensiveness of the available evidence that has already been documented. This document is intended to be used as a worksheet by the informally constituted working groups that some countries convene so that they can prepare reporting on evaluation measures and indicators relating to the RSSR that are as comprehensive as possible.

It is understood that practical constraints will mean that most UNESCO Member States cannot address all aspects of the 10 key priority areas in full, comprehensive detail. For this reason, this conceptual framework is designed to be used selectively to target aspects of the RSSR where clarification and orientation would be helpful. That is, the framework is designed to allow national working groups to pick and choose which key priority areas they would like to consider further at any given point. This is a supporting document to aid the monitoring process and does not replace direct engagement with the key priority areas and the full text of the RSSR.

Conclusion

Recent years have seen a surge in public support for science (Jensen *et al.*, 2021). Research systems need to improve to be worthy of this public trust. To do this, we need to take an evidence-based approach to advancing the principles, such as inclusive and transparent research processes, that RRI and the RSSR share (Jensen & Gerber, 2020). Establishing robust methods for evaluating progress in the development of more socially responsible research and innovation systems is essential to ensure progress. The RSSR is a useful means of advancing this effort, offering a ready-made agreement of many countries with monitoring already included. The monitoring process will continue in perpetuity, thus making it an excellent focus for aligning global efforts to create improved science systems. The conceptual framework included in the supplementary materials for this letter offers a tangible structure for advancing this global alignment into the future.

Data availability

Underlying data

Zenodo: Full Text Conceptual Framework for Monitoring Socially Responsible Research and Innovation (RRI) aligned to the UNESCO - led Recommendation on Science & Scientific Researchers. [Data set]. DOI: 10.5281/zenodo.5715729.

This project contains the following underlying data:

- Full Text Conceptual Framework for Monitoring Socially Responsible Research and Innovation (RRI) aligned to the UNESCO - led Recommendation on Science & Scientific Researchers (detailed breakdown of each of the 10 key priority areas for monitoring the 2017 Recommendation, including quotations mapped over from the full text of the RSSR).

Data are available under the terms of the Creative Commons Zero "No rights reserved" data waiver (CC0 1.0 Public domain dedication).

Acknowledgements

Thank you to April Tash, Eleanor (Lali) van Zuydam, Brady Wagoner and Daniela Martin and the RRING project partners, stakeholders, and contributors who provided insights feeding into this deliverable.

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Foulds C, Khalid R, Jensen EA, *et al.*: **Social responsibility in research and innovation practice and policy across global regions, institutional types, and fields: Interview data and qualitative content analysis outputs revealing the perspectives and experiences of professionals [version 1; peer review: 2 approved, 1 approved with reservations].** *Open Res Eur.* 2023; **3**: 65.
Publisher Full Text

Gerber A, Forsberg EM, Shelley-Egan C, *et al.*: **Joint declaration on mainstreaming RRI across Horizon Europe.** *J Responsible Innov.* 2020; **7**(3): 708–711.
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Reference Source

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Reference Source

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Open Peer Review

Current Peer Review Status: ✗ ✓ ? ✓ ✗ ✗

Version 2

Reviewer Report 08 August 2023

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✗ **Tim C Jennerjahn**
Department of Biogeochemistry and Geology, Leibniz Centre for Tropical Marine Research, Bremen, Germany

The title and the abstract suggest the reader that the paper explains the mentioned conceptual framework. The term is mentioned in numerous instances in the text, however, the text does not include any concept. So, the paper fails its purpose totally. How can it be that the main subject of an article is hidden in the supplement? Impossible. The supplementary itself is a very long list (44 pages) of the 10 key themes of the RSSR mentioned in the article.

As I assume from reading the text as is, such a framework would be a needed instrument to monitor success of the implementation of the RSSR to achieve RRI. However, it is not really clear to me and I do not see the conceptual framework itself.

Journal policy obviously requires to keep articles short. It is therefore clear that explanations of a concept need to be short (possibly with an extended document as supplementary material), but nevertheless it must be explained in the main text. This should be possible as the text is full of repetitions and redundant information. Moreover, it uses flowery language and remains vague/unclear in many instances. This, in turn, allows to shorten the text by about 50 % and instead enter relevant information explaining the concept itself.

Unfortunately, this manuscript comes without line numbers, which makes it difficult to provide specific comments. So, I will do it related to sections/paragraphs.

Abstract: The very first sentence mentions RRI and RSSR, but does not really clarify the relation. Is the RSSR the vehicle/mechanism that should lead to RRI, or is the mentioned "conceptual framework" required to monitor/assess the success of the RSSR to achieve RRI? By the way, is the term "social" relevant content-wise? If so, it should be abbreviated "SRRI". A clear statement in the beginning would be extremely helpful for understanding the article. Later parts of the abstract can be shortened substantially (in particular the last paragraph starting from "The paper explicates..." can be deleted) and should introduce the main idea of the concept itself.

Introduction: The second paragraph is full of vague/unclear statements and repetitive; it doesn't provide a lot of relevant information. Shorten this.

Context for conceptual framework: The context should be given in the introduction. Some (little) of the information presented here (mainly the 10 priority areas of the RSSR, maybe including table 1, possibly plus one explanatory sentence each) can be moved to the introduction, the rest can be deleted.

Development of the conceptual framework: Where is the framework? It is not there. Is it necessary to describe the history of development through case studies from various regions without having an idea about the concept itself? The final sentence of the first paragraph states an "overlap" between RRI and RSSR. So, what does that mean? Is there a gap? How is this gap going to be closed, with the "conceptual framework" mentioned? Please describe the framework and explain how it closes the gap (The term "overlap" is not very helpful, because it is quite vague).

Using this conceptual framework: In the current version of the article this section is meaningless as the reader did not see the conceptual framework as yet. The last paragraph is a repetition and can be deleted.

Conclusion: As is the conclusion is rather a summary of the previous, again full of repetition. It is lacking a real conclusion, a potential impact/implication of the conceptual framework (if there were one). Moreover, it includes the quite bold and not very respectful statement "Research systems need to improve to be worthy of this public trust". Do you want to question research ethics, or what is it that you challenge here?

References: The majority of refs are the author's own publications, besides there is a number of UN documents. Are there no other papers/views/opinions?

Supplement: It says it contains the "full text conceptual framework", however, I see a long listing of the 10 RSSR priority areas, but not really a conceptual framework.

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)

No

Does the article adequately reference differing views and opinions?

No

Are all factual statements correct, and are statements and arguments made adequately supported by citations?

Partly

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)

Partly

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Biogeochemistry, global carbon and nutrient cycles, climate change, environmental change, science - society interface, knowledge exchange, research impact, transdisciplinary science, evidence-informed decision-making, stakeholder engagement

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Reviewer Report 04 August 2023

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Simon Fielke
Sustainability Pathways, CSIRO Environment, Dutton Park, Queensland, Australia

This letter is labelled a conceptual framework but there is no conceptual framework. The supplementary document is more of an expansion of the ten key themes rather than what I would consider an operational conceptual framework.

There are many references to the authors work (over half the reference list) and I am sure there are other relevant works concerning the science of responsible innovation as a process of practices - eg the original conceptualisations (Owen, Stilgoe, *et al*).

- *Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)* – No

  The Open Letter suggests a conceptual framework that is not presented in the text nor in an appropriate format for me to consider it a conceptual framework. I appreciate that the format has only allowed limited representation of the conceptual framework in text, but that suggests to me this is the wrong format if the contribution of the letter cannot be made within the letter.

- *Does the article adequately reference differing views and opinions?* – No

It is mainly self-citations when there are many relevant and seminal responsible innovation contributions overlooked – i.e. where did such thinking and practice come from and why is it important?

- *Are all factual statements correct, and are statements and arguments made adequately supported by citations?* – Partly

  See above comments – where is the conceptual framework built from and how are the ten themes operationalizable?

- *Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)* - Yes

- *Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)* – Partly

  As a researcher in this space I cannot see how I would operationalise the framework in the supplementary material.

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
No

Does the article adequately reference differing views and opinions?
No

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Partly

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Agricultural innovation; innovation studies; human geography

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Reviewer Report 31 July 2023

https://doi.org/10.21956/openreseurope.17663.r34089

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Steven Umbrello
[1] Department of Philosophy and Education Sciences, University of Turin, Turin, Italy
[2] Center for Religious Studies, Fondazione Bruno Kessler, Trento, Trentino-Alto Adige/South Tyrol, Italy

Abstract
The abstract is well-written, summarizing the aim, methodology, and key points of the paper, including the creation of a conceptual framework for monitoring socially responsible research and innovation (RRI) in alignment with UNESCO's Recommendation on Science and Scientific Researchers (RSSR). The importance of fostering global learning and improvement in RRI is clearly articulated.

Introduction
The introduction offers an adequate overview of the international accord RSSR and its alignment with the RRI concept, emphasizing the importance of monitoring and evaluation. A clear connection to EU policy and research regarding RRI is presented, but it may still need a bit more clarity in framing the relationship between RRI and RSSR as per reviewer two's comments.

Context for conceptual framework
This section details the framework's design, tone, and intended audience. While it is informative and extensive, it might still benefit from a brief summary or visual representation (like a diagram) of the framework itself in the main body to address reviewer one's concern about structure.

Development of the conceptual framework
The development process of the framework is explained, including the involvement of UNESCO and the logical deductions applied in its creation. While comprehensive, the absence of the detailed framework in the main text might still leave some readers wanting a more concrete understanding of what it contains.

Using this conceptual framework
This section provides practical guidance on how to use the framework, targeting specifically UNESCO Member States. It's clear, informative, and engages the reader with a specific call to action.

Conclusion
The conclusion highlights the need for evidence-based approaches to enhancing RRI principles, emphasizing the importance of the RSSR and the ongoing monitoring process. The author has addressed the initial concern about redundancies.

Author's Response
The author's response indicates they have taken the initial reviews seriously, making adjustments where feasible and explaining why other changes were not made. The clarification regarding the removal of the framework's content due to editorial requirements is important but leaves an unresolved concern about the structure.

Recommendations for Improvement
1. **Clarify the Relationship Between RRI and RSSR**: As suggested by reviewer two, the introduction should provide a clearer framing of how RRI aligns with RSSR.

2. **Include a Brief Overview or Visual of the Framework**: While it's clear the details of the framework were moved to supplemental material due to editorial guidelines, a brief summary or visual representation could enhance reader comprehension without overwhelming the main text.

Conclusion
The revised manuscript has made efforts to address the concerns raised by the initial reviewers. While some improvements have been made, further refinement could enhance the clarity and comprehensibility of the paper, especially in the context of the relationship between RRI and RSSR, and the visualization or summarization of the framework. The paper represents an essential contribution to the understanding of RRI and offers a valuable tool for UNESCO Member States and others in their monitoring efforts.

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
Yes

Does the article adequately reference differing views and opinions?
Yes

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Yes

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: RRI, value sensitive design, and ethic-by-deisgn approaches to novel and transformative technologies

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 21 October 2022

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?

Raul Tabares
[1] Basque Research and Technology Alliance (BRTA), Derio, Spain
[2] Basque Research and Technology Alliance (BRTA), Derio, Spain

Dear author,

Thank you for submitting your work to Open Research Europe.

The topic that addresses this letter is relevant and timely and it tries to engage with ongoing efforts and strategies for strengthening science-society interactions. The open letter pays attention to the synergies between RRI and the UNESCO “Recommendation on science and scientific researchers’ (RSSR) that was ratified by 195 UNESCO Member States in 2017. The article is well-written, and the language employed is accessible.

However, there are several issues that demand attention from the author to improve this open letter. Some of them are related with the content whilst others are more related with the format. In this sense, I tend to agree with the other prior reviews in several issues. I propose to the author several changes in order to strength this manuscript:

- It is important to frame the “RRI discourse” on the text and to illustrate which synergies with RSSR have. It is hard to understand for a not-specialized reader.
- Eliminate redundancies and repetitions. Especially in the conclusion which does not point to next steps or future challenges ahead.
- The introduction is too long for a short letter like this. It needs to be shortened around half

(or even more) and incorporate the RRI concept which is not explained at all in the paper.

- Section two of the letter should provide more details about how the framework was set up. Specially of interest for the reader should be to expand the 10 points of the figure into subsections (more space for the figure will be welcome in the text).

- Section three will benefit from a further clarification about the “supporting function” that this document has.

- Mentions to COVID-19 at the end of the text are confusing for the reader. It should be erased.

- The text will benefit from “citation diversity”. Especially for situating the concept of RRI into the text and helping to the reader to understand the synergies between RRI and RSSR.

The changes proposed here demand significant work on this paper (major changes), but I think that the letter will benefit from this work to become a valuable contribution on this matter.

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
Partly

Does the article adequately reference differing views and opinions?
No

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Partly

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: RRI, RI, science-society interactions, STS

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 11 April 2022

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Kutoma Wakunuma
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This is a well articulated article written in language that is accessible. The article addresses the need for the inclusion of socially responsible research and innovation in UNESCO's RSSR quadrennial monitoring process. It gives a clear rationale for the need for a conceptual framework intended to monitor the development of socially responsible research and innovation systems. Although the article's language is accessible with subject-specific terms such as RSSR explained and abbreviations given, the concept of RRI could have benefited from an in-depth explanation of what it is and what it entails particularly for stakeholders unfamiliar with the term or with its practices. Further, in as far as RRI is concerned, the paper could have done well to offer differing views and opinions of RRI which may not necessarily be a universal concept that is understood and practiced in the same way across the 195 UNESCO member states. As such, different views and opinions, particularly in as far as its understanding and practice in different geographical locations are concerned would have been valuable. Therefore, given that there are 195 member states who may or may not fully understand the rationale or concept of RRI or who no doubt may practice it differently, a presentation of competing assertions would have been an ideal consideration in the article. By so doing, the article would have given insight to potential challenges in the field, therefore providing possible considerations on how to address evaluation challenges and potential mutual learning points in the monitoring process of RSSR. Further, such considerations could offer a much deeper understanding of the challenges that have prompted the need for the incorporation of socially responsible research and innovation systems when it comes to RSSR. This is important, particularly for stakeholders unfamiliar with RRI.

The article makes a great point about UNESCO's omission, albeit deliberately, in providing specifics of how to assess and improve the social responsibility of science systems in line with the RSSR policy instrument. Although the intention was to allow context-appropriate adaption of RRI, it would still have been beneficial to have some criteria or as indicated by the author specifics on the assessment and RRI systems. This could avoid unwieldy interpretations, implementations, and evaluations of the RSSR to the extent that the varied interpretations become challenging in their address of RSSR policy, especially in terms of comparability between member states. Similarly, the fact that member states can use the conceptual framework selectively to target aspects of the RSSR where clarification and orientation would be helpful may not bode well for comparability between member states. Granted, this is intended to be helpful for those member states who may not be able to address all 10 key priority areas in full. Despite this, it would have been beneficial to have compulsory aspects of the RSSR that each member state would need to address as a way of ensuring uniformity while leaving some as optional in the event of a failure in addressing all 10. That said, this is a timely article that is useful in its contribution to the importance of having

socially RRI systems in RSSR policy.

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
Partly

Does the article adequately reference differing views and opinions?
No

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Yes

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Information and communication technologies for development; Emerging Technologies; Computer Ethics; Gender; Responsible Research and Innovation

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 18 March 2022

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Justus Wesseler
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The open letter is about suggesting a conceptual framework for monitoring RRI under the UNESCO-led Recommendation on Science and Scientific Researchers. The open letter is difficult to follow. The author suggests a framework for monitoring the RRI. The framework has been attached under supplementary information. The letter needs to be substantially improved. A few suggestions:

- The author writes a lengthy introduction (almost half of the text), but the reader receives almost no information about what the monitoring framework is about. This needs to be added to the main body of the text. At least a summary about the key aspects of the framework one would expect in the main body of the text.
- The introduction should be shortened to about a quarter of the text.
- The open letter includes a number of redundancies. The conclusion restates what has been written in the introduction. Redundancies need to be removed.
- In the conclusion, it should be more clearly stated what the next steps according to the author should be.
- The last paragraph talks about ecosystem research and COVID-19. As a reader, I got lost. This had not been mentioned before, why now?

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
Partly

Does the article adequately reference differing views and opinions?
Partly

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Partly

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)
Partly

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Agricultural, environmental, and natural resource economics. Substantial experience in reviewing interdisciplinary research proposals. Expertise in developing and

assessing monitoring frameworks.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.