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COMMISSION

Community Research



Agreed (RRI) Convergence Strategy

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Executive Summary

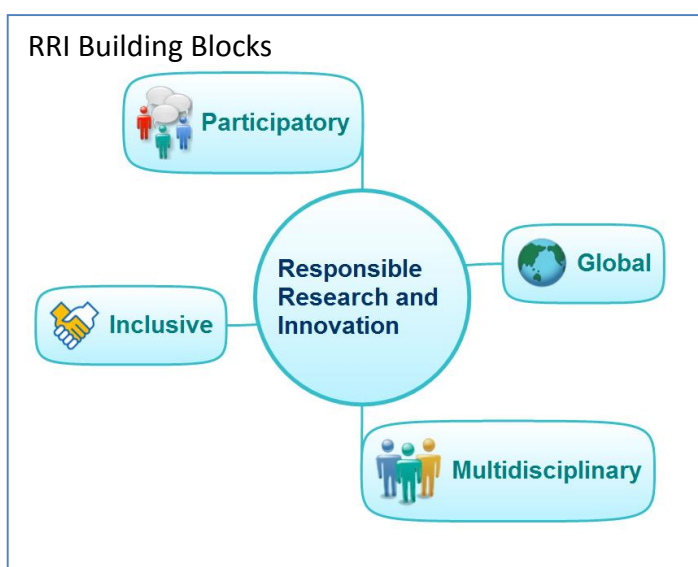
From 2013-2016, ProGReSS has built a global network of diverse societal actors on Responsible Research and Innovation (RRI). Our final objective is to anticipate and strategize for potential global convergence of RRI while taking seriously senior international commentators who have argued persuasively that it is too early for RRI convergence¹. Hence, this Deliverable seeks to contribute to *future* potential RRI convergence by facilitating mutual learning in global partnerships.



Global Voices Panel, *RRI – Shaping New Horizons*, January 2015 (from left to right: Philippines Prof. Fatima Castillo; South Africa Hennie Swart; India Prof. Sachin Chaturvedi; China Dr Han Bing; South Africa Prof. David Kaplan; Malaysia Dr Rohaya Mohd Nor; Australia Prof. John Weckert; USA Prof. Michael Davis; South Africa Mario Mahongo).

A convergence strategy does not mean eliminating differences. For governance systems, convergence can mean the tendency for different systems to perform similar tasks. For instance, the South African and the Chinese ways to achieve inclusion through innovation may differ in terms of the policies and tools used, but the spirit and the main goals may remain the same. **We are advocating for global convergence of the *spirit* of RRI, but without simply exporting European ideas abroad.** We wish to build upon both the differences and agreed priorities as they have been identified in this report, so that a new common pathway to inclusive societally desirable research and innovation can be developed. In this report our partners in Australia, China, India, South Africa and the United States comment on four different European documents that are relevant in the context of RRI discussions.

- Resilient Europe
- Juncker's 10 Priorities for Europe
- SwafS Definition of RRI
- SwafS Indicators for Promoting and Monitoring RRI.



In analysing the “global voices” obtained on European RRI to take a first step towards convergence of RRI ideas, four RRI buildings blocks have emerged. Our partners from all major continents have welcomed/praised as well as criticized European RRI in terms of its: participatory nature, its focus on inclusion, its multi-disciplinarity and its aspiration to be global.

¹ Opinion of mid-term reviewers after evaluating the results of four EU funded RRI projects.

European RRI Indicators



All our commentators considered the 8 RRI indicators suggested by the Science with and for Society Unit (SwafS) of the European Commission an “impressive” machinery to monitor RRI advances with the proviso that the addition of *sustainability* and *inclusion* were essential. The SwafS Indicators for Promoting and Monitoring RRI were thus praised unanimously. However, *how* this machinery will become operational is still not clear. In this regard, our Australian commentators also pointed out an intrinsic tension in the European RRI goals. On the one hand, RRI is regarded as having a role in the creation of a society that is inclusive, sustainable, innovative and reflective. On the other hand, RRI aims to promote Europe’s economic interests and strengthen its international role and standing. These two aims could be contradictory within Europe and are most certainly so at the global level.

Tension within European RRI



However, there are elements for a common strategy that can be appreciated, and their consideration and prioritization could lead to a convergence of RRI approaches globally.

As noted above, we grouped those elements highlighted by our contributors into four categories;

- * Inclusive RRI,
- * Participatory RRI,
- * Multidisciplinary RRI, and
- * Global RRI.

We believe that the first three can be prioritized in order to achieve the last one, a Global understanding of what ‘responsible’ means and requires in research and innovation.

Inclusive RRI

RRI discussions at a higher level are about the “sort of future ... we want science and innovation to bring into the world”.² The society which RRI could help to shape, according to ProGReSS and its global commentators, should make explicit mention of the futures of women, immigrant communities, the poor, and other vulnerable and marginalised people – in other words, all those who - for cultural, political or economic reasons - have not been involved or represented in research and innovation processes so far, and often have not benefitted from their outcomes.

Participatory RRI

Key action points such as Open Access and Open Science are appreciated for developing an improved inclusive participation model. However, better ICT literacy and improved, user-friendly ICT products are not the only ways to open up the barriers to participation of all groups in science, research and innovation. The barriers that marginalised people face can be of a different nature and ICT cannot be the only solution. All barriers to participation need to be acknowledged and addressed.

Multidisciplinary RRI

It is not recommended to advocate a framework where ‘research and innovation’ and ‘science’ are often mentioned together, while non-natural science research (e.g. the humanities, non-technological innovations) is omitted. An overly narrow definition of the term ‘science’ also prevents the consideration of alternative forms of knowledge and their incorporation into the research and innovation process. Successful examples of co-innovation from low and middle income countries include the use of “Traditional Knowledge systems”.

Global RRI

Even to achieve its aim of global competitiveness, RRI cannot focus solely on the needs, values and expectations of European society. International markets require a focus on the needs, values and expectations of other regions. More importantly, in order to create a more just and inclusive society the spirit of RRI has to be global; Europe has responsibilities towards other regions, based partly on its historical contributions to humanity’s current Grand

Challenges. According to our US commentators, Europe’s “soft power” is worth harnessing here, for example, its ability to shape the world through its inventions - everything from the Union itself (the rarest of polities, an empire created by peaceful means) to the development of products, services, and standards.

*Which
Future?*

² Richard Owen. 2016. Keynote speech. *RRI – Shaping New Horizons*. 14 January 2016, EESC.

Introduction³

*Finally we need to be **Open to the World!** ... I would like to ... begin building a global research area. This will not happen in one step, but through developing partnerships with other areas, such as China, Latin America and the United States.⁴*

Carlos Moedas,
European Commissioner for
Research, Innovation and
Science, June 2015



Carlos Moedas, European Commissioner for
Research, Science and Innovation

From 2013-2016, ProGReSS has built a global network of diverse societal actors on Responsible Research and Innovation (RRI). A major fact-finding mission comparing science funding strategies and innovation policies in Europe, the US, China, Japan, India, Australia and South Africa was concluded. In the process, the European interpretation of RRI was promoted globally.

Our final objective is to anticipate and strategize for potential convergence of RRI. By convergence we mean the tendency for different systems to become similar to each other over time or to perform similar tasks. For instance, the US National Science Foundation's "broader impacts" criterion aims to achieve broader societal benefits from research and innovation so that citizens gain more immediate benefits from government investment in science. Likewise, the societal desirability criterion of von Schomberg's RRI definition aims for clearer benefits for citizens from research and innovation; "rights impacts", as von Schomberg calls them.⁵

RRI is as yet too new a concept to show strong convergence tendencies, even in Europe⁶. However, convergence can be assisted by three means: force (e.g. legal forces), chance or a constructive co-operation involving mutual learning in global partnerships.

Convergence by legal forces

In Europe, RRI is a framework based on specific values, for instance the values of gender equality and providing for citizens' needs.⁷ The legal enforcement of such values is often contentious, as the long-term debates about affirmative action on behalf of women show.⁸ Enforcement of such values at the global level is even more contentious, given the history of colonialism. However, there are some mechanisms for doing so that seem to be widely accepted, in particular linking compliance with specific values to eligibility for funding. In other words, enforcing adherence to values can be effective if adoption of these values is a prerequisite for receiving research and innovation funds. Adherence to research ethics and research integrity requirements are obvious examples. This

³ To increase dissemination potential, no jargon or overly technical language was used in the report.

⁴ https://ec.europa.eu/commission/2014-2019/moedas/announcements/interdisciplinary-cooperation_en

⁵ von Schomberg, Rene. 2013. "A Vision of Responsible Research and Innovation". In *Responsible Innovation* edited by Richard Owen, John Bessant, and Maggy Heintz, 51-74, London; John Wiley, p.56 .

⁶ Opinion of mid-term reviewers after evaluating the results of four EU funded RRI projects.

⁷ <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/science-and-society>

⁸ The views of proponents and critics of affirmative action are well summarized for the US situation in the following document: <http://www.ncsl.org/research/education/affirmative-action-overview.aspx>

explains why the main champions of RRI are currently European funding agencies.⁹ However, our sister project *Responsible Industry* rightly comments:

Responsible Research and Innovation (RRI) is a newly emerging approach to govern science and innovation ... to date ... mostly used for publicly funded research and innovation. What about industry, one might ask? A lot of research and innovation takes place outside the publicly funded sphere and, indeed, the European Commission is interested in applying the concept to private industry. A pessimist might say: "Goodness no, not yet another innovation governance framework. They just keep coming. I hope we can wait until this one blows over."¹⁰

To achieve RRI convergence across diverse societal actors, it is currently unclear whether and how legal forces can be helpful. For industry especially, convergence through adherence to voluntary standards might be preferable.¹¹

Convergence by chance

Another way to reach convergence of technical or governance systems relies on chance. For instance, take traffic lights. An excellent system might have a buzzer for blind people, a count-down indicator in seconds to pacify restless people and reduce jay-walking, a traffic light on the other side of a crossing so that all drivers can see it, including the first driver at the lights, and a switch off function to stop traffic lights using up energy late at night. It is perfectly possible that countries develop such systems in parallel and simultaneously, without learning from each. However, such convergence by chance is highly inefficient; convergence by mutual learning and collaboration is preferable as it preserves development resources that can be used elsewhere, and is usually faster.

Convergence by mutual learning in global partnerships

Mutual learning at the global level assumes that knowledge is widely dispersed and that listening to diverse voices will generally improve outputs. In the language of RRI:

... societal actors (researchers, citizens, policy makers, business, third sector organisations etc.) ... work together during the whole research and innovation process in order to better align both the process and its outcomes with the values, needs and expectations of ... society. This approach to research and innovation is called Responsible Research and Innovation (RRI).¹²



Mutual Learning
<http://tinyurl.com/jrblghm>

⁹ For instance, the European Commission under its research framework Horizon 2020, the Dutch Research Council, the Norwegian Research Council or the UK Engineering and Physical Sciences Research Council, to name just a few examples of important sponsors of RRI.

¹⁰ Responsible Industry (2015) *A Framework for implementing Responsible Research and Innovation in ICT for an ageing society*, Deliverable 2.4, p.4, available at <http://www.responsible-industry.eu/dissemination/deliverables>,

¹¹ For a book length discussion of how voluntary corporate responsibility tools can be used to achieve RRI convergence, see Kostas Latridis and Doris Schroeder (2015) *Responsible Research and Innovation in Industry - The Case for Corporate Responsibility Tools*, Springer, <http://www.springer.com/us/book/9783319216928>

¹² <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/science-and-society>



During our work in ProGRESS, we have promoted the European interpretation of RRI globally. In this Deliverable, we turn the tables and listen to global voices commenting on European RRI in order to achieve mutual learning, which we take to be the first step towards RRI convergence. **We selected four key European RRI documents and obtained analyses of them from South Africa, the USA, China, India, and Australia.** All four documents include one value that was centrally important to ProGRESS, namely **inclusion**.

The remainder of this report:

- introduces the four key European RRI documents,
- provides insightful comments on European approaches to RRI from South Africa, the USA, China, India, and Australia¹³ and
- concludes with recommendations on European RRI from around the world.

However, a note of caution is necessary. The mid-term review for ProGRESS noted that it is too early to ask for RRI convergence. This was also expressed by Prof. Richard Owen in his keynote speech at the *RRI – Shaping New Horizons* conference in January 2016, which ProGRESS co-organised. He said:



Prof. Richard Owen at RRI conference January 2016

...what sort of future do we want science and innovation to bring into the world, what do we care about, and on what values should these be based? We cannot assume [answers will be ...] culturally homogeneous, and I will conclude with an appeal for pluralism and diversity in this respect...

We need to not only move from risk to innovation governance, but we need to fundamentally reframe innovation. We need to encourage and take seriously world views that offer different normative frames. We can't afford to close down the discourse in this respect. ... Can RRI reframe innovation, and in doing so reframe our political economy? In a world with a fragile future in which societal change must come if we are to survive

*and flourish, I believe this is one of RRI's greatest challenges, and one of RRI's greatest opportunities.*¹⁴

Hence, agreeing with Owen, our main strategic recommendation for RRI convergence is to obtain further, high-level input from around the world on RRI for mutual learning. In the process, the European understanding of RRI will also be further promoted, as the ProGRESS project showed.

¹³ The rationale for the sequence of the countries is as follows. Australia used a different approach to the other countries (thematic discussion rather than text by text commentary on the four European reports). The Australian report is therefore presented last as it leads into the recommendations. The remaining reports are ordered according to length, with the longest (South Africa) being first.

¹⁴ Richard Owen. 2016. Keynote speech. *RRI – Shaping New Horizons*. 14 January 2016, EESC.

Four Key European RRI Documents

After discussions within the team and consultation with the ProGReSS policy officer, four RRI-related documents were chosen for analysis. There were two main reasons for the decision:

1. These documents play a key role in European RRI debates.
2. They make clear reference to inclusion and justice; values which have been promoted by the ProGReSS group as part of RRI throughout the project's duration.

Short excerpts of the documents are given below with **inclusion** highlighted in **bold**. In addition, Juncker's priority 9 is highlighted to show an alignment with Moedas' statement "Open to the World" and the global scope of the ProGReSS project.

Resilient Europe – inclusive, innovative and reflective

"A well-functioning, smart, innovative, reflective and inclusive Europe ... will only work on the basis of well-developed human and social capacities. Existing and newly emerging imbalances in our societies pose tremendous challenges to Europe's societal wealth ... for example:

- **social divides** and distinct kinds of discrimination and isolation, for example because of gender, religion, belief, race, disabilities, education, immigration, and age;
- high unemployment rates in certain regions, especially of young people and of **marginalised groups**;
- lack of qualified human resources in many sectors and regions; and
- **the increasing risk of poverty and the increasing gap between rich and poor.**"¹⁵

Juncker's 10 Priorities for Europe

1. A New Boost for Jobs, Growth and Investment
2. A Connected Digital Single Market
3. A Resilient Energy Union with a Forward-Looking Climate Change Policy
4. A Deeper and Fairer Internal Market with a Strengthened Industrial Base
5. A Deeper and Fairer Economic and Monetary Union
6. A Reasonable and Balanced Free Trade Agreement with the U.S.
7. **An Area of Justice and Fundamental Rights Based on Mutual Trust**
8. Towards a New Policy on Migration
9. **A Stronger Global Actor**
10. A Union of Democratic Change¹⁶



Jean Claude Juncker
President of the European Commission

¹⁵ *Resilient Europe*. 2014, p.23. <http://tinyurl.com/q3snp53>

¹⁶ http://ec.europa.eu/priorities/index_en.htm.

Science with and for Society – Definition of RRI

“RRI is an **inclusive** approach to research and innovation (R&I), to ensure that societal actors work together during the whole research and innovation process. It aims to better align both the process and outcomes of R&I, with the **values, needs** and expectations of European society.”¹⁷

Science with and for Society – Indicators for Promoting and Monitoring RRI

Six of the key areas are defined by the EC: public engagement (PE), gender equality, science education, open access, ethics and governance.... Two more areas of relevance to RRI are **sustainability and social justice/inclusion**.¹⁸

Diagram 1 – European RRI Action Points



¹⁷ <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/science-and-society>.

¹⁸ http://ec.europa.eu/research/swafs/pdf/pub_rri/rri_indicators_final_version.pdf page 5.

South African Input on European RRI

South Africa provided input from two perspectives:

- policy advice/academia
- NGO representing vulnerable peoples

Prof. David Kaplan holds a Chair in Economics at the University of Cape Town. His work on innovation includes being the coordinator of the task team that produced the Green Paper on Science and Technology (S&T), December 1996; engaging in the White Paper on S&T, June 1996; panel member for two Five Year Reviews of the CSIR; member of the National Advisory Council on Innovation, 1998 – 2004. He provided input into the Ministerial Committee on Science and Technology (2011-2012) and is currently a member of the board of the Technology Innovation Agency.



South African San Institute (SASI) colleagues with ProGReSS Co-ordinator Doris Schroeder at a ProGReSS workshop in 2014.

Dr Roger Chennells (first left, middle row) is the legal advisor and one ProGReSS partner for SASI. His contribution was agreed after consultation with Andries Steenkamp (middle, bottom row), Mario Mahongo (third from right, top row) and Hennie Swart (not shown).



In addition,

- views from an early career researcher at the University of Cape Town (Dr Laura Pereira) were integrated into the text and
- a meeting with South African policy makers was held, information about which can be found in the Appendix.

Academic Policy Perspective from South Africa

Professor David Kaplan with some quotes from Dr Laura Pereira

The reports and priorities/definitions under consideration are all highly competent and germane to RRI. I will focus mostly on the first report, *Resilient Europe – inclusive, innovative and reflective*. At the same time, I have a concern that not only applies to this report, but also to the Juncker Priorities and to the Science with and for Society (SwafS) definition of RRI. This concern relates to the understanding of RRI.

As I see it, the key aspect of responsible research is the widening of research and innovation – in both its application and its processes – to broader sections of society. Of most concern in this “widening” is an extension to those in society who have historically been most excluded - especially immigrant communities, the poor and women. An explicit focus on these social groups is required if RRI is to be realised, in practice and in spirit. All of the reports are implicit on this issue, and in some places explicit recognition is given. However, none of the reports provides a sufficiently clear focus on this issue, and this underpins many of my suggestions in regard to all materials under consideration.

The key aspect of responsible research is the widening of research and innovation – both in its application and in its processes – to broader sections of society.

David Kaplan

Resilient Europe – inclusive, innovative and reflective

The report¹⁹ distinguishes 5 themes, namely:

- Theme 1: Understanding Europe. The changing role of European culture and society
- Theme 2: Promoting a collaborative, creative and sustainable economy
- Theme 3: Building an open, engaging and innovative public sector
- Theme 4: Facing the turbulence of regional and global change
- Theme 5: Overcoming inequalities by developing Europe’s human and social capacities

The ambit of these issues is very wide – almost anything could fall within these five themes. Since all five themes are explicitly equal and indeed they are presented as a ‘package’ there is little sense of prioritisation. From the perspective of more marginalised groupings in European society, which should be a central concern of RRI, one could make a good case for the *sine qua non* of their successful integration into society as requiring enhanced economic growth and employment creation i.e. prioritisation of the economic theme. This is of particular importance to new immigrants and to their effective absorption into European society.

Ordering priorities is always difficult and contentious. However, avoiding the ordering of priorities altogether results in a sort of ‘laundry list’ and this, in turn, does not allow for the focusing of resources on key issues. Nor does a large laundry list allow for the separation of more immediate from less immediate challenges, and the consequent sequencing of policy interventions.

¹⁹ *Resilient Europe*. 2014, <http://tinyurl.com/q3snp53>.

Theme 1: Understanding Europe. The changing role of European culture and society

The motivations underpinning this theme appear to be twofold. The first is as a means to create cohesion and unity and the second is as a means to enhance entrepreneurship in relation to cultural industries.

However, these two themes can be in tension. Entrepreneurship in cultural industries is a complex issue entailing much more than enhanced knowledge of the past. The report focuses on research as a means to create cohesion and unity but does not spell out the precise linkages that it sees between enhanced understanding and appreciation of the past and the promotion of cultural industries. From an RRI perspective, this is a very important issue because the barriers to entry in cultural industry are often quite low. For instance, ‘spreading their culture’ – music, cooking etc. – is an important point of entry for new and often young entrepreneurs, especially women and those who have immigrated from elsewhere and who have few opportunities currently to enter the labour force.



Container City for Immigrants
Franky242 freedigitalphotos.net

Europe's history and connectedness to the rest of the world is often emphasised, but the legacy of colonialism and Europe's global responsibility given its past is not expanded on.

Laura Pereira

The report is very clear about the different traditions within Europe and the entry of new cultures and societies from outside Europe and the contested narratives etc. of this diversity. There is no attempt to assert a single unified narrative, rather emphasis is, rightly, on diversity and contestation. The incorporation of the history of non-European migrants is explicitly emphasised. “How to include the heritage and history of the large groups of non-European migrants in the European narrative and how to turn this heritage and history into a source of cultural, social and economic strength?” (p. 10).

However despite this, the report comes perilously close to a somewhat utopian view that understanding will result in shared values – and “European values” at that. For example – “Exploring Europe’s richness of cultural diversity as a value, asset and a source of innovation can reinforce European cohesion, unity and mutual understanding, and thereby assist the EU’s competitiveness, growth and attractiveness to the rest of the world.” (p. 8). And again, “How to use the understanding of history as a springboard to enhance European cohesion, well-being, welfare and unity, while challenging the narratives of voices which question the tenets and even existence of European values?” (p. 10).

The implicit assumption is that, while there may be contestation, in the end there is (or will be) common ground of value and of interpretation of the past. However, this is seriously open to question. Are the cultural and religious practices of many immigrants compatible with European traditions and values? What of religious practices and the status of women? These are, of course, some of the most debated and contentious issues within Europe today, generating as much prejudice as they do understanding. However, this is not an issue – or a set of issues – that can be glided over. **It is the responsibility of social science to delineate these differences and to place them squarely in front of governments and the public.** The report is silent on these, admittedly

extremely difficult issues. More than this, the report implicitly advances the view that there is ultimately a reconciliation of the different cultures and traditions and that such differences can be bridged via more research and understanding.

Theme 2: Promoting a collaborative, creative and sustainable economy

The report rightly emphasises that the current pattern of growth does not incorporate large numbers of people – even when the growth rate is high. A new trajectory is required. From an RRI perspective, this is indeed the right approach – a new growth trajectory needs to be found. Even if there is a return to the high growth rates of a few decades ago, which seems extremely unlikely, this will not be sufficient. **High growth rates resulted in very limited benefits to the many poor and marginalised and were accompanied by increasing inequality.**

The report draws attention to new trajectories of economic growth - a sharing economy growing from a small base facilitated by ICT, and a so-called collaborative economy which includes sharing of assets, then finally new business models that are being developed around the so-called creative economy, or the economy of creative industries.

“The latter is based on individual talents and skills that include all the capabilities and interests of many more people, rather than assuming that most of the population are largely passive consumers” (p. 12). A focus on this broader economic base is very much in line with the spirit of RRI at both the individual and the community level and the place of marginalised communities is explicitly recognised. “This adds both economic and social value to communities, many of which were previously disadvantaged or threatened, and enhances the development of smart localities and smart cities” (p. 12).

Similarly, according to the report, actions should consider “The impacts on communities, structurally marginalised individuals and groups, and the role of the collaborative and creative economy in tackling inequality and poverty, as well as contributing to improved self-esteem and quality of life” (p. 14).

This second theme of the report accordingly recognises the RRI concerns for marginalised communities – both in its objectives, impacts and actions. It also recognises the importance of establishing the impact on sustainability – in the sense of being reproducible and self-sustaining, which is a further pillar of RRI (see for instance, the sustainability criterion in Rene von Schomberg’s definition of RRI²⁰).



However, there is a concern that this focus results in the neglect of any consideration of the mainstream formal economy. The report notes, correctly, that even at high levels, economic growth has been accompanied by growing inequality and limited incorporation of marginalised groups into the mainstream economy. However, it makes no proposals as to research into the policies that might change or at least ameliorate this growth trajectory. Moreover, despite not being the entire

²⁰ von Schomberg, Rene. 2013. "A Vision of Responsible Research and Innovation." In *Responsible Innovation* edited by Richard Owen, John Bessant, and Maggy Heintz, 51-74, London; John Wiley.

answer, higher growth can certainly contribute to higher tax revenue, which can be used to benefit poorer communities and individuals, The report makes no recommendations *vis a vis* enquiry into what might spur overall economic growth apart from policies to support the sharing and collaborative economies.

Theme 3. Building an open, engaging and innovative public sector

The report makes a strong case for an open, engaging and innovative public sector. Inefficient government is at the root of many problems and constraints in society and, from an RRI perspective, these constraints are particularly inhibiting for poorer and more marginalised groups who have more limited means to find a “way around” inefficient public institutions and government (e.g. less access to accountants and lawyers).

As the report recognises, the poor and marginalised feel alienated by public sectors that are closed and hidebound by tradition. So, the need for a more open and engaging public sector goes well beyond the efficiency argument and advocates for: “Public policy innovation and experimentation that can improve both the functions and the decisions of the public sector, for example through crowdsourcing, open and evidence-based policy modelling and monitoring, as well as increase the trust in and the perceived legitimacy of government” (p. 18).

Again there is emphasis on building trust and cohesion: To meet the challenges Europe faces, however, the public sector should go much further and achieve greater impacts by becoming significantly more open and by empowering all societal actors, so that people do not only feel governed but also that they are themselves part of governance structures with real influence. “It should involve everyone in creating public value that is more than efficiency and prosperity, but also contributes towards building trust, cohesion, well-being, quality of life and the environment for ordinary people” (p. 16).

It is the stress on “ordinary people” and the building of trust and cohesion that accords so closely with RRI principles, as I interpret them from a South African policy advisor and academic perspective. However, there are two dimensions of an engaging and innovative public sector which do not receive attention in this report.

The first dimension is recruitment – **to make the system open and accessible it may be critical to employ persons from marginalised communities with understanding and appreciation of the challenges faced by such communities and individuals located in them.** Service, accessibility and trust for and on the part of more marginalised communities is enhanced when recruitment is effected amongst those communities in the public sector from the police to public education and health.

It is the stress on “ordinary people” and the building of trust and cohesion that accords so closely with RRI principles.

David Kaplan

The second dimension is critical for innovation – how to make the state itself more innovative. **Research is needed into understanding where and under what conditions governments and public institutions more broadly are likely to be more innovative.** What practices might be legislated for that would change the orientation of governments and public services in the direction of innovation? One critical area is in procurement – how can government as a major consumer spur innovation? Innovation is frequently spurred on by consumers – and government is

a very large consumer. Requiring bidders for government contracts to be innovative – provide new solutions to problems where the “order” is function specified (limit traffic to x, for example) rather than product specified (3 traffic lights) is one area of significant potential change. A more innovative state brings in new suppliers and creates more opportunities for new entrants, which is critical to the RRI objective of widening the list of beneficiaries to include formerly excluded elements of society.

Theme 4: Facing the turbulence of regional and global change

Facing the turbulence of regional and global change is an all embracing theme. It appears to cover the world and to cover many themes of societal change. However, there is a somewhat odd focus on ICT, as indeed there appears to be throughout the report. E.g. “Important areas of focus include the increasingly diverse and innovative ways countries emerging from authoritarian rule or armed conflict deal with their violent past, the role of economic issues and ICT in mobilising the general public and the role of international actors therein, and the emergence of electorally legitimised authoritarianism on Europe’s fringes in a number of countries” (p. 21). And, “... research should enable Europe’s policy makers and political leaders to develop evidence-based policies to engage with social media and with innovative ICT, which are extensively used by extremists to reach out and transmit their messages both inside and outside the EU, and to develop evidence-based answers to the pressure of mass migrations towards the EU” (p. 21).

This is not to say, of course, that ICT is not critically important but what is strange is that no other ‘technologies’ are mentioned, such as biotechnology or nanotechnology, for example.

Since this theme is all embracing, it is as well that the immediate priorities in terms of area and of themes, are delineated. In terms of area the immediate priority is stated as:



*Tablet Computer
nokhoog_buchachon freedigitalphotos.net*

The societal transformations within the crescent at the south and southeast of Europe which sees the resilience of radical and fundamentalist religious groups, a reverse of democratic development, the failing of states, civil war and growing inequality and poverty. Understanding these developments can inform European policy makers to design new policies which can help stabilise societies in North-Africa and the Middle East, and to counterbalance with innovative policies and tools the societal pressures responsible for large waves of migration to the EU, especially via its southern and south-eastern borders. (p. 22)

It is not quite clear precisely which countries are included but there can be little doubt, particularly given the ‘refugee crisis’ that this is a critical area for European research. In terms of priority themes, one is noteworthy, where the report focuses on:

The role of European values in the world, together with establishing a shared reflection on the meaning and direction of economics, politics, artistic practices, inequalities and exclusion, as well as human life in general, between Europe and its global partners in Africa, Asia and the Americas. This will strengthen Europe's position in shaping the global future and the emerging 21st century world order. (p. 23)

It is unclear why the focus on ICT permeates the report to such an extraordinary degree.

Laura Pereira

The theme "European values" uses a very questionable term. It is a term that is open to many interpretations and indeed questioning whether such shared values exist. Since it examines the impact of European values on a global scale, this overarching theme also covers the whole world. Also, this theme covers many sub-themes such as politics, economics etc. This results in the theme of "European values" being delineated in a manner which is amorphous and ill-defined.

Theme 5: Overcoming inequalities by developing Europe's human and social capacities

The theme overcoming inequalities by developing Europe's human and social capacities relates closely to the concerns of RRI in respect of marginalised and poorer communities:

Key questions to be addressed are for example: How can capacities of special groups (i.e. groups discriminated on the basis of disability, gender, ethnicity or age) be built to make them feel engaged in their communities and to make them creative, innovative and productive by linking them to open access and knowledge sources, which can improve their community's productivity and growth as well as their social engagement in open participatory governance? How can retired people's knowledge and capacities be re-activated, for example for contributing to train and build up capacities of youngsters, marginal groups, or of people in disadvantaged regions or in disadvantaged educational systems? How can the demand side (economy, government, civil society such as voluntary actors) and the 'supply' side of human and social capacities, be better aligned across Europe, and, in particular, how can marginalised groups (including immigrants from outside the European Union) be enabled to participate fully in European society? How can the digital opportunities of open and free training and knowledge access be leveraged in a way to contribute to a better matching of demand and supply. How can digital tools enable marginalised groups or disadvantaged regions to benefit more effectively from building human and social capacities, and in turn contribute to reduce the increasing gap of rich versus poor communities across Europe and within Member States? (p. 24)

There is a clear recognition of the 'social waste' entailed in societies which do not incorporate its entire people into social and economic life. And this theme, much more clearly than the other themes, gives explicit recognition to measures of inclusion of marginalised and poorer groupings in society. The key to widening participation of the marginalised is seen to lie with ICT:

An emerging big need is to build, to sustain, and to activate competences and capacities of particular groups that lie idle or that potentially might develop into disruptive and damaging activities, or even undermine the common welfare of Europe. These include the marginalised, the elderly, unemployed of any age and gender, precariously employed and less developed regions. These assumptions are based on the known availability of, and ubiquitous access to, well-equipped facilities of ICT systems. This also depends on the

willingness of those possessing knowledge and capacities to engage with the unemployed, precariously employed and marginalised groups, and in less developed regions to support capacity building. Finally, we assume that if no effective counteractions are taken, tensions will increase, the future prosperity of Europe will be endangered and growth of Europe will decrease especially in relation to global partners, and the full potential of the human and social capital of European societies will not be leveraged effectively. (p. 24)

This section also recognises that research is needed on how to engage hitherto marginalised groupings with limited skills:

To contribute to better understand the phenomena and motivational factors of developing social and human capacities of, for example, the structurally underprivileged. This should further evolve into new innovative and flexible models of capacity building and of effectively activating resources (for example of the elderly and retired groups, but also of the unemployed or of immigrants, especially those with special skills) that might otherwise continue to lie idle. (p. 26)

This theme more than any other accords with RRI in terms of an explicit focus on marginalised groupings, including research into new methods of incorporation.

Absent Issues

The themes in the *Resilient Europe* report are a comprehensive and detailed listing covering a very wide area. However, there are some important elements that are absent. The fifth of the high level principles states – “... we also realise that research and innovation in themselves do not make an impact, so that direct engagement and inclusion of all stakeholders is required”. (p. 5)

The report makes no mention of social-ecological innovation, which is critical in sustainability transitions.

Laura Pereira

Despite this statement one important component that is largely absent from the report is *how* to widen and also how to *democratise* research in the social and human sciences. RRI and inclusive innovation seek not only research and innovation that serve the needs of the wider community, especially the poor and marginalised elements of the community, but also to develop research practices that would engage the recipients themselves (widen) in research and to develop research methods whereby the knowledge and skills of the recipients could be engaged in the research endeavour (democratisation).

Questions that pose themselves are: What are the concrete proposals to extend research in the human and social sciences beyond its present confines – universities, think tanks etc? What existing institutions could be engaged? What new institutions could be supported?

The direct engagement of persons and communities hitherto absent from the processes of research and innovation is an important component of inclusive innovation and of RRI. This might be termed the widening of the research and innovation process itself. The report alludes to this issue but does not develop it to any extent.

The report is, as to be expected, very European-focused. From an RRI perspective, marginalisation and associated inequalities are critically global in character, and the need for RRI is particularly important in respect of the global playing out of poverty and exclusion. The report does not list globalisation as a key priority for research. Globalisation has many dimensions that have a critical impact on the issues of environmental sustainability, self-sustaining and incorporating and meeting the needs of broader swathes of society especially the poor and marginalised. However, Europe's 'problems' require that these issues are confronted by research and the mitigating policies proposed. Two issues that are of critical importance to RRI that are not singled out here as research priorities are:

The direct engagement of persons and communities hitherto absent from the processes of research and innovation is an important component of inclusive innovation and of RRI.

David Kaplan

The report does not list globalisation as a key priority for research.

David Kaplan

- Global warming
- Global governance – particularly in relation to economic development

I would like to conclude this section with the question: What contributions should social and human science research in Europe make to address these issues?

The 10 Juncker Priorities

From a South African perspective, I welcome Priority 9, the ambition for Europe to become “a stronger global actor”.²¹ This requires global engagement and action not just in traditional areas such as trade, defence, and international aid, but also in the area of research and innovation.

Many of the challenges Europe faces are inextricably linked to events in other parts of the world - economic migrants being a case in point. Looking outward at what Europe can contribute to the world is a first step in responsible research as a 'global player.'

Laura Pereira

Science with and for Society - the SwafS Definition of RRI

The SwafS definition of RRI is:

RRI is an inclusive approach to research and innovation (R&I), to ensure that societal actors work together during the whole research and innovation process. It aims to better align both the process and outcomes of R&I, with the values, needs and expectations of European society.²²

Mentioning “inclusive” when describing the approach is appropriate, as *responsible* research and innovation must be inclusive. However, focusing on European values, needs and expectations closes the discourse off from *global* values, needs and expectations.

To incorporate justice considerations further, I would add the following to social actors: “in particular those who have hitherto been economically and socially marginalised”. At the end one might add “...so as to overcome social and economic divisions.” However, this addition could be

²¹ http://ec.europa.eu/priorities/index_en.htm

²² <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/science-and-society>

dropped since European needs and values might be defined and understood to include this. If these two proposals were added and a global focus envisaged the definition would be:

RRI is an inclusive approach to research and innovation (R&I), to ensure that societal actors, *particularly those who have hitherto been socially and economically marginalised*, work together during the whole research and innovation process. It aims to better align both the process and outcomes of R&I, with the values, needs and expectations of ~~European~~ society (so as to overcome social and economic division).



Shoes Broken
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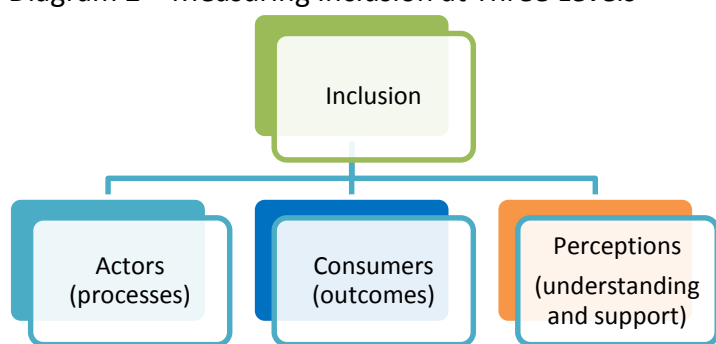
Indicators for promoting and monitoring Responsible Research and Innovation

This is an impressive piece of work – separating indicators for process, outcome and perception across all of the different dimensions is particularly innovative and useful. The report²³ is correct in stating that indicators need to move away from being solely outcome based to consider process. At a societal level, RRI needs not only to be done but to be seen to be done and to be supported as such.

The listing of 8 categories is comprehensive – there would be no reason to add to this list. However, I do have a reservation. In my view, RRI, as I have understood and indeed would wish to understand it, is that the processes and the outcomes of research and innovation should be more responsive to (European) society. Hitherto, research has been undertaken by and principally benefitted some sections of society. In the process many have been excluded, either wholly or partially. Responsible Research and Innovation therefore entails ‘bringing in’ to the research and innovation processes

those who have hitherto been absent and/or conducting research whose outcomes would better meet the needs of hitherto marginalised groupings. It is this “widening” to include hitherto excluded (or at least not fully incorporated) social groupings into the research and innovation process, both as actors and as beneficiaries, that RRI should seek to achieve if it is to give full meaning to the term “responsible” or “socially responsible.”

Diagram 2 – Measuring Inclusion at Three Levels



On this basis, I would suggest that each of the criteria developed by the expert group should seek some measure/s of the extent to which new social groups are being brought into research (a) as actors - the processes (b) as consumers – the outcomes and (c) perceptions – understanding of and support for research.

²³ http://ec.europa.eu/research/swafs/pdf/pub_rri/rri_indicators_final_version.pdf.

NGO Perspective from South Africa

The following comments were agreed at the South African San Institute as input for this Deliverable. The South African San Institute represents the San people of South Africa, a highly marginalised group within a lower middle income country. That the San have a strong interest in contributing to innovation was described in Deliverable 4.3²⁴, where their contribution to health care research was highlighted.

Resilient Europe – inclusive, innovative and reflective

The following are our general comments on the *Resilient Europe* document²⁵.

In section 2 the document frames Europe as not only being in the grip of rapid societal and cultural change, but more importantly, as being increasingly connected with robust challenges impinging from the outer world. The process of “Europeanisation” and the original “optimism of the founders of the European Commonwealth” (p. 6) relating to what they hoped would be shared norms, values beliefs and rules are juxtaposed with a reality described as including “nationalistic, xenophobic, fundamentalist and even racist ideologies” (p.6) creating a reality that the report refers to as a form of “positive dynamism” (p. 6).

In analysing the bottlenecks and gaps that have followed this changing role of European culture and society, the report refreshingly recommends a problem-oriented, interdisciplinary approach in the social science and humanities sector, emphasising the need for “interfaces” (p. 9) that assist policy makers and researchers.

Section 5 of the report (p. 19) analyses some of the most challenging global and regional changes, where “authoritarian rule is being re-established while violence, civil wars and terrorism threaten the stability...” and “the rise of Asia threatens the western-dominated world order and balance of power”. In discussing expected outputs (p. 20) the report adds to the above lists of woes, “mass migration, and the development of radical Islam” as further challenges to Europe’s former hegemony. The authors of the *Resilient Europe* report have clearly attempted to ensure that Europe is realistically framed within the context of the multiple social and political challenges that are prominent in the media headlines.

Furthermore section 6 of the report, which goes on to address European human capacity development, contains a series of motivations for “integrated and multi-disciplinary research and innovation actions” (p. 26) including information and communication technology (ICT) which are



Mama Xasae Kgao, San

²⁴ Bierwirth, A., Cavallaro F., Chennells, R., Schroeder, D. (2015) *Recommendations from industry and end-users for RRI*, Report for FP7 Project “ProGRESS”, progressproject.eu, http://www.progressproject.eu/wp-content/uploads/2013/05/PROGRESS_D4-3_Final.pdf

²⁵ *Resilient Europe*. 2014, <http://tinyurl.com/q3snp53>

required and recommended in order to ensure that Europe develops its social capacities inclusively, innovatively and reflectively.

Finally, section 7.2 of the report lists a number of interlinked factors which, in addition to those listed above, contribute towards the increasing need for Europe to become more cognisant of the non-European world. In summary, these include “facing the turbulence of regional and global change” (p. 31).

Among the assumptions underpinning the development of the Research and Innovation challenge is included the assumption that “Humanities must focus more strongly on trans-national phenomena, and digital frameworks need to make it easy to integrate cultural heritage content from different backgrounds into integrated offerings (European trans-national information platforms)” (p. 38). These are amongst other statements in the report that emphasise the fact that European solutions can no longer be generated solely from within Europe and without multiple strategies to integrate the full complexity of other societies. **One could summarise this as an assumption that Europe no longer has the luxury or right to issue value statements and rules to the world without being fully cognisant of its changed and interlinked reality.**

Finally in the response to question 7.2 (p. 49) which was simplified as “how can interdisciplinary research be used?” many proposals are made for multidisciplinary research into multicultural scenarios. In all of the descriptions, which include conventional approaches to social enterprise, commerce and innovation, no mention is however made or attempt ventured to aspire towards benchmarks determining the “responsibility” of such interdisciplinary research. Words such as inclusivity or sustainability are absent. **In this regard, the contribution of the PROGRESS project in reflecting on the responsibility of research in view of societal inequality and global environmental challenges would add these missing components to the relevance of this report.**

The failure of the report to reflect specifically on major global crises such as climate change and their impact on Europe’s relationship with low and middle income countries, must be seen as major omissions.

Roger Chennells

It could be added that the failure of the report to reflect specifically on major global crises such as climate change and their impact on Europe’s relationship with low and middle income countries, must be seen as major omissions, which the various outputs of the PROGRESS project will again serve to address.

The 10 Juncker Priorities

“Justice and Fundamental Rights” is Juncker’s priority 7.²⁶ From the perspective of the South African San Institute, this important priority has to be supplemented with a set of standards or criteria (such as the RRI framework) to ensure that Europe’s perceived fundamental rights are achieved within a fair ethos. Social and economic benefits are simply assumed, rather than framed within a conscious set of criteria that would ensure responsibility, such as social justice, inclusion, and sustainability, i.e. sensitivity to broader social contexts. The implication is overwhelming that values and norms underpinning these “Justice and Fundamental Rights” are exclusively “European” in concept, and

²⁶ http://ec.europa.eu/priorities/index_en.htm.

lacking in broader reflective or responsible context. Priority number 9, described as “EU as a Stronger Global Actor” contains a range of predictable actions based strongly upon Europe as a powerful and economically influential global force, confirming the resilient stereotype of Europe as being defensive in ethos, as well as utilising power rather than persuasion as a preferred mode of global action.

The Science with and for Society Definition of RRI

Within the SwafS definition of RRI²⁷, the South African San Institute values the emphasis on an *inclusive* approach to research and innovation. This approach has been exemplified by the San’s collaboration with a range of industries to bring new health and well-being products to market. The emphasis on “European” society, on the other hand, is out-dated.



Indicators for promoting and monitoring Responsible Research and Innovation

This report²⁸ is an excellent document. We support the comments provided by Davis and Laas in the US section of this Deliverable, and would like to associate ourselves with each of them. In addition, we have the following comments.

With regard to the objective and purpose of the expert group (p. 9), it would have been useful to indicate the degree to which the group’s mandate enabled it to consider and address the topic in a way that incorporated the world outside of Europe. The section on public engagement (p. 21) which is described as a “societal commitment to provide encouragement opportunities and competences in order to empower citizens to participate in debates around R & I” would be enriched if there was some mention of special efforts to include more vulnerable sectors of society that by their nature are not able to participate easily. The “outcome indicators” and “perception indicators” could have included acknowledgement of such a particular responsibility to engage proactively with more vulnerable / less powerful groups in society.

The report describes science events and initiatives to promote innovation (p. 23). **The word science seems, however, to be narrowly defined. Particularly in low and middle income countries, much attention is currently being given to “Traditional Knowledge systems” and “Traditional world views” as presenting entirely different epistemological frameworks for science with potential for use for modern science** (e.g. the San *Sceletium* case²⁹). The ancient knowledge systems that hold wisdom derived from millennia of observation have been shown to have value for modern science. It is noteworthy that Dimension 2 describes only mainstream science, and it would be enriched if the scope of the word science were to be enlarged to cover the less formal areas of human knowledge systems. These comments regarding a broader conceptualisation of “science” also apply to the section on Open Access Open Science (p. 31).

²⁷ <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/science-and-society>.

²⁸ http://ec.europa.eu/research/swafs/pdf/pub_rri/rri_indicators_final_version.pdf.

²⁹ Konstantinos Latridis and Doris Schroeder (2015) *Responsible Research and Innovation in Industry*, Springer Briefs, Berlin, pp.13-15.

United States Input on European RRI

Michael Davis and Kelly Laas, Illinois Institute of Technology

We begin with a general comment. Speaking as Americans, we see nothing wrong with documents prepared for the European Union being ‘Euro-centred’. The problem, when there is a problem, is a document that is ‘*too* Euro-centred’, that is, one that overlooks important aspects of a policy because those aspects seem extra-European, for example: the expectation or needs of Asians, Africans, or Americans concerning a product designed for sale in Asia, Africa, or the Americas; or discussion of a ‘European crisis’ (such as an aging population) without taking account of responses elsewhere to similar crises, responses that might be worth copying altogether or at least in part, or being carefully avoided. We can speak with some authority on the subject of being too parochial because our country often seems to ignore European experiences when choosing policies, and to suffer in consequence.



Laas speaking at ProGReSS event in Paris, 2013
Davies speaking at ProGReSS event in Beijing, 2014

Much of the time, however, we may simply be speaking as humanities scholars (a philosopher and a librarian) with a long-standing interest in engineering and science, citizens of a *cosmopolis* that includes both ‘the republic of letters’ and ‘the republic of technology’.

Resilient Europe – inclusive, innovative and reflective

*Resilient Europe*³⁰ contains only one reference to “responsible research and innovation” (or its equivalent). The one use is:

Question 7: Which areas have the most potential to support integrated activities, in particular across the societal challenges and applying key enabling technologies in the societal challenges and vice versa; and cross-cutting activities such as social sciences and humanities, *responsible research and innovation* including gender aspects, and climate and sustainable development? Which types of interdisciplinary activities will be supported? (p. 6, italics ours)

Resilient Europe considers ways in which social-science research might be made more responsible. There is also some discussion of innovations, especially economic innovations, such as ways to increase demand for certain products or services. **But we saw nothing in the report about the role of the humanities or social sciences in responsible *technical* research and innovation, for example, the inclusion of an anthropologist or ethicist in a team developing a prototype home-health monitor.** There certainly are examples of such inclusion in the literature concerning RRI (and related concepts).³¹ We consider this a major omission and a lost opportunity for the humanities and social

³⁰ *Resilient Europe*. 2014, <http://tinyurl.com/q3snp53>.

³¹ See, for example, Steven M. Flipse et al., “The Why and How of Enabling the Integration of Social and Ethical Aspects in Research and Development”, *Science and Engineering Ethics* 19 (2013):703–725; Julio R. Tuma, “Nanoethics in a

sciences to contribute both to Europe's welfare and, given the importance of Europe to the world, to the world's welfare as well.

The 10 Juncker Priorities

Priority 6 of the Juncker Priorities³² is "Europe-US Free Trade".

The Priority has two "Objectives". The second is: "Making progress towards mutual recognition of EU / US product standards or working towards transatlantic standards." **As a recommendation, we would like to see those standards include *process* guidelines highlighting RRI.** This would encourage RRI in both the EU and US, especially at the innovation end of the research-innovation continuum. We would also like the process of *drafting* the guidelines itself to meet RRI standards, especially by including the public and users of the standards early in the drafting process.

We consider this [the omission of the humanities/social sciences in interdisciplinary research] a major omission and a lost opportunity for the humanities and social sciences to contribute both to Europe's welfare and, given the importance of Europe to the world, to the world's welfare as well.

Priority 7 is "Justice and Fundamental Rights." This priority is primarily about integrating Europe's legal systems (especially, its bulwarks against corruption, organized crime, and terrorism). Today, the defence of fundamental rights seems to include a good deal of potentially intrusive technology (such as software for capturing emails in cyberspace). The development of potentially intrusive technology should, as much as possible, be undertaken in an RRI framework. We saw no mention of that in the presentation of this priority.

The fourth section of Priority 7 states, "Obtaining guarantees that U.S. government agencies adequately protect EU citizens' personal data." Referring back to Priority 6, the development of standards for mutual data collection and use that are developed using RRI principles may be one way to encourage U.S. companies to adopt greater protections for customers on both sides of the Atlantic.

Priority 9 is "EU as a Stronger Global Actor". We regret that this priority seems to focus largely on the use of force (with only one of the five Objectives focused on diplomacy). Missing altogether from this priority is any mention of Europe's "soft power", for example, its ability to shape the world through its inventions; everything from the Union itself (the rarest of polities, an empire created by peaceful means) to the development of products, services, and standards.



European Parliament
Matt Banks freedigitalphotos.net

Nanolab: Ethics via Participation", *Science and Engineering Ethics* 19 (2013):983–1005; Erik Fisher et al., "Midstream Modulation of Technology: Governance From Within", *Bulletin of Science, Technology & Society* 26 (December 2006): 485-496; and Jeroen van den Hoven et al., editors, *Handbook of Ethics*.

³² http://ec.europa.eu/priorities/index_en.htm

Science with and for Society - the SwafS Definition of RRI

The SwafS definition of RRI is:

RRI is an inclusive approach to research and innovation (R&I), to ensure that societal actors work together during the whole research and innovation process. It aims to better align both the process and outcomes of R&I, with the values, needs and expectations of *European society* (italics ours).³³

While we recognize both the political advantage of the reference to European society and the moral importance of “European values”, we think this formulation of RRI to be a mistake for at least two reasons. First, for many products, the “needs...of European society” may not be relevant, for example, when developing a vaccine for use against a tropical disease unknown in Europe. Indeed, the focus of responsible research and innovation for such a product should be on the “needs and expectations” of the societies in which the vaccine is to be used (“the relevant persons”). Second, even when doing research or development for a product destined for Europe, European needs or expectations may not be crucial. For example, for a product designed for the blind of Europe, it is the needs and expectations of the European *blind* that are crucial, not what Europeans generally need or expect. We therefore regard this definition of RRI as *too* Euro-centred and recommend rewriting the phrase in which “European” appears as: “European values and the needs and expectations of the relevant persons”.



Sustainable energy sources
kongsky freedigitalphotos.net

Under the official definition is a list of five outcomes RRI is supposed to have. The list has only a loose resemblance to the list given in *Indicators of RRI* (discussed below). For example, omitted entirely are “sustainability” and “social justice”, a rather large omission. On the other hand, it separates gender equality from all other sorts of equality: “ensure gender equality, in both the research process and research content”. Writing from a US perspective, we recommend revising this outcome to read: “ensure equal treatment of people, including gender equality, in both the research process and research content.” As a result inclusion of all previously underprivileged or even oppressed groups would be governed for.

Indicators for promoting and monitoring Responsible Research and Innovation

While we found *Indicators for RRI*³⁴ generally impressive, especially the care given to the practicalities of measurement, we nonetheless have two suggestions, one concerned with 2.5 Open Access/Open Science and one concerned with 2.8 Social Justice.

1. **Open Access.** Pp. 31-33 of the report list three kinds of indicators of “Open Access /Open Science” (levels 0-2). All seem to view “societal actors”, especially the public, as outside the ordinary process of research and development. The report therefore seems to ignore an

³³ <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/science-and-society>.

³⁴ http://ec.europa.eu/research/swafs/pdf/pub_rri/rri_indicators_final_version.pdf.

important idea in RRI: **societal actors should be involved in the process of research and development, not as mere judges on the side-lines, but, when possible, as full participants.** We therefore propose adding (something like) the following: *Level 3: The number of societal actors who have participated in research and development of a publication, product, or service as regular members of the team.*

2. **Participation.** The report identifies only two “perspectives” on social justice: “(a) the relationship between the researchers and the research subjects; and (b) the participation of social groups in benefits arising from research.” (p. 7). We think the report misses an important part of RRI, the inclusion of interested parties as participants in the research (and development) itself. We therefore suggest adding a third perspective: “(c) the participation of social groups in the research and development itself”. Measures of inclusion of such groups in research and development certainly seems possible. For example, the US’s National Science Foundation (NSF) issues a report every two years looking at the participation of women, minority groups, and persons with disabilities in science and engineering education and employment.³⁵

The report misses an important part of RRI, the inclusion of interested parties as participants in the research (and development) itself.

³⁵ Michael Davis and Kelly Laas (2014), “‘Broader Impacts’ or ‘Responsible Research and Innovation’? A comparison of two criteria for funding research in science and engineering”, *Science and Engineering Ethics* 20(4) 963-83.

Chinese Input on European RRI

Han Bing and Ren Lin, IWEI, Chinese Academy of Social Sciences

The comments below are a response to four documents concerning Responsible Research and Innovation (RRI) policy and definitions. As European policy documents, these documents are 'Euro-centred' and we agree with the American colleagues' view that there is 'nothing wrong with a document prepared for the European Union being 'Euro-centred'. Our comments merely aim to provide a broader perspective on how RRI can become a global framework. Our comments reflect the authors' disciplinary backgrounds in law and politics.



Ren Lin (left) and Han Bing speaking at ProGReSS event in Beijing, 2014

Resilient Europe – inclusive, innovative and reflective

*Resilient Europe*³⁶ is focused on Europe. Initially, one could argue that EU-centred research is fine. However, the world is becoming more and more linked and many issues are becoming part of a global agenda. The settlement of those issues in the global domain will help resolve problems at the EU level. Further, the current problems among the EU member states might also spill-over into the global domain. Taking migration as an example, it might influence the social and economic situation within the EU and may trigger even global instability.

In our view, the target group for *inclusive* research and innovation needs to be expanded to a broader group, namely the migration group. To integrate those people into the given culture, society, and political and economic system is a challenging task confronting the EU. When we talk about building inclusive, innovative and reflective societies, these are societies where migrants do not break local social and cultural cohesion, nor cause global instability (including terrorism). To achieve this migrants' education and working conditions must be improved.

In our view, the target group for inclusive research and innovation needs to be expanded to a broader group, namely the migration group.

When talking about the biggest challenges, the report identifies the necessities of re-modification of the European Social / Financial / Political / Cultural Models. Nevertheless, it is not enough to say that the European Social Model needs to be adapted and preserved, Europe's political institutions need

to be renewed (European Political Model), Europe's financial structure needs to be strengthened (European Financial Model) and Europe's unique cultural structure needs to be made more of an asset than it is today. The problem lies in the fact that the core of the challenge is not identified clearly. What is the relationship between these levels? Which level, namely the social, political, cultural, or economic, bears the core causality of all these challenges? Furthermore, "field research" is missing from the discussion of new actions needed for future research and innovation challenges. Even though a case study can collect lots of national characteristic elements, field research could

³⁶ *Resilient Europe*. 2014, <http://tinyurl.com/q3snp53>.

obtain first-hand data, integrate differences and provide comparisons. This seems like an obvious point, but worth making from a global perspective, as the omission is noticeable.

The 10 Juncker Priorities

Priority 7³⁷ is "Justice and Fundamental Rights". This priority mentions that the shared values of the European Union are spelled out in the Treaties and in the Charter of Fundamental Rights. Through an analysis of the EU Charter of Fundamental Rights, we find that it not only embodies the principles of human rights protection, but also stresses the protection of fundamental ethics. For instance, article 3, "Right to the integrity of the person" provides that:

1. Everyone has the right to respect for his or her physical and mental integrity.
2. In the fields of medicine and biology, the following must be respected in particular: (a) the free and informed consent of the person concerned, according to the procedures laid down by law; (b) the prohibition of eugenic practices, in particular those aiming at the selection of persons; (c) the prohibition on making the human body and its parts as such a source of financial gain; (d) the prohibition of the reproductive cloning of human beings.³⁸



Accordingly, it is considered that the EU should uphold fundamental rights; and doing so will link to undertaking research and innovation, responsibly, as some fundamental human rights are affected by research.

The only problem is that if RRI wants to 'go global', with reference to fundamental rights it should not be limited to the *EU Charter of Fundamental Rights* as States are not consistent in their understanding of fundamental rights. Instead, it needs to point out that fundamental human rights are spelled out in the *Universal Declaration of Human Rights* and other related documents of UNESCO.

Priority 9 is "EU as a Stronger Global Actor". We agree with our American colleagues' view that "this priority seems to focus largely on the use of force (with only one of the five Objectives focused on diplomacy)". To be a stronger global actor, it is not enough to merely focus on using force. If the EU more actively participated in global governance and uses

its potential as a "soft power", then the EU can play a greater role in global political, economic, and environmental governance.

³⁷ http://ec.europa.eu/priorities/index_en.htm

³⁸ *CHARTER OF FUNDAMENTAL RIGHTS OF THE EUROPEAN UNION*, 2012/C326/02, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012P/TXT>.

Science with and for Society - the SwafS Definition of RRI

The SwafS definition of RRI is:

RRI is an inclusive approach to research and innovation (R&I), to ensure that societal actors work together during the whole research and innovation process. It aims to better align both the process and outcomes of R&I, with the values, needs and expectations of *European* society (*italics ours*).³⁹

This SwafS definition of RRI strengthens stakeholders' participation during the research and innovation process, and is concerned that the process and products of research and innovation are compatible with the values, needs and expectations of **European** society. As a term with a history of only a decade, RRI is still a developing framework and it may become an international agenda in the future. However, the definition currently defines RRI within Europe, which may hinder its further development. In addition, in the era of globalization it is difficult to define products to meet the needs of a particular society. Therefore, we suggest that the concept should not just be limited to Europe.

Further, considering that developing an agreed definition will be the first step to making RRI more influential, we would like to note that another definition of RRI, produced through an EC report, is clearer as well as more practicable and more operational, in our view. This alternative definition of RRI is:

Responsible Research and Innovation (RRI) refers to the comprehensive approach of proceeding in research and innovation in ways that allow all

stakeholders that are involved in the processes of research and innovation at an early stage (A) to obtain relevant knowledge on the consequences of the outcomes of their actions and on the range of options open to them and (B) to effectively evaluate both outcomes and options in terms of societal needs and moral values and (C) to use these considerations (under A and B) as functional requirements for design and development of new research, products and services.⁴⁰



This definition is more general and therefore, in our view, better suited for the global promotion of RRI, whilst bearing in mind that the consideration of different country characteristics is still important.

³⁹ <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/science-and-society>

⁴⁰ Hoven V. D., Jeroen, Klaus Jacob, Linda Nielsen, Françoise Roure, Laima Rudze, Jack Stilgoe, 2013, *Options for Strengthening Responsible Research and Innovation*, Directorate-General for Research and Innovation, Science in Society, Brussels.

Indicators for promoting and monitoring Responsible Research and Innovation

Like our colleagues from other regions, we found the *Indicators for RRI*⁴¹ generally impressive. Six of the key areas defined by the EC are public engagement, gender equality, science education, open access, ethics and governance. Taking the two other relevant areas, namely sustainability and social justice/inclusion into account, we believe these reflect the dimensions of RRI almost comprehensively.

Yet, for China and some other low and middle income countries, the core of RRI would be the issue of development, which is not clearly identified as part of the RRI agenda of Europe, except by the recent additions of inclusion and social justice. This is important to mention. Taking environmental issues as an example, where the level of sustainability reflects the stage of development. Lots of countries have gone through stages of “from pollution to governance”. First, to the edge of governance while polluting and finally to the stage of cleaner production and a circular economy pathway, which is one route to development for society as a whole. However, some countries have not moved to the stage of successful governance after the pollution stage and have been caught in a vicious cycle, while others have managed – within limits – both sustainability and development goals. For many low and middle income countries, the key concept linked to the issue of achieving sustainability or not is development. At a higher stage of development, cities have more advanced technology to handle the problem of pollution as well as more funding to purchase required technology and equipment.



Oil pollution

Sujin Jetkasettakorn freedigitalphotos.net

The former fog city of London has successfully transformed itself to a city with a better environment and ambitions towards a sustainable economy. Nevertheless, it has not stopped industrialization during its history. On the contrary, during the process of industrialization, London relocated its enterprises and advanced its industrial technology, which promoted a green transformation. Therefore, sustainability cannot be solved without industrialization, but the measures to achieve sustainability lie in the process of industrialization.

RRI is an interactive process, through which each stakeholder can input into market acceptance, sustainability and social desirability. RRI also has different stages, which is accompanied by different levels of development. The higher the latter is, the higher the recognition from all the stakeholders related to RRI.

⁴¹ http://ec.europa.eu/research/swafs/pdf/pub_rri/rri_indicators_final_version.pdf

Indian Input on European RRI

Krishna Ravi Srinivas, Research and Information System for Developing Countries

This document has been prepared by the ProGReSS team at RIS. It provides an Indian perspective on the four RRI-related documents as agreed by the Progress consortium.

Resilient Europe – inclusive, innovative and reflective

*Resilient Europe*⁴², as was already noted by our American colleagues, does not mention the term RRI, except once.

Also, as was noted by our American and our Australian colleagues, the role of the social sciences and the humanities is under-explored. However, it is noteworthy that the report makes reference to mutual learning and shared discourses with Asia (amongst others).

Moreover, in order to strengthen Europe's position in the larger world, research on the mutual influence and ties between the world regions and on the way Europe and its heritage are viewed from outside are needed. SSH can contribute to knowledge of the deeply interconnected histories of Asia, Africa, Latin America and Europe. As an outcome of this research, Europe and its global partners will be able to shape a shared discourse on the role of European values in the world and a shared reflection on the meaning and direction of economics, policies, artistic practices and human life. This will strengthen Europe's position in shaping the global future, and will also help create greater international inclusiveness around shared values like democracy, human rights, the rule of law, and transparency in public affairs, as championed and often pioneered in Europe.⁴³

Europe's desire to shape the global future, as indicated in this report, would benefit from examples where "shared reflection on the meaning and direction of economics, policies, artistic practices and human life" has been successful. In the future, perhaps, the topic of RRI could provide such a platform. At the same time, a global discussion of RRI might rely on shared values and even the understanding of democracy, human rights and the rule of law might be different in different countries. An international agreement on what inclusiveness means may also turn out to be fragile. There is enough scope for dialogues on these values though, and the Asian experience can be enlightening for Europe. There are studies on grass-root politics and activism that have championed values like transparency and human rights by contextualizing them instead of talking in terms of universal norms or global conventions. In other words the justification for these values arises not because they are considered universal values but because they are considered as essential elements for governance and public welfare in those contexts. This results in laws and developing institutions that are built on this understanding although they may be borrowing some aspects from experiences elsewhere. If the shared reflection results in a better understanding of the diversity in interpretation and implementation of values than simply relying on a Western/Eurocentric understanding, this would be welcomed in India.



Srinivas speaking at ProGReSS event in Beijing, 2014

⁴²Resilient Europe. 2014, <http://tinyurl.com/q3snp53>.

⁴³ Ibid. p.20.

The 10 Juncker Priorities

Priority 7⁴⁴ is "Justice and Fundamental Rights". How RRI could be linked to the Juncker Priorities is not always clear. However, the fourth section of Priority 7 focuses on: "Obtaining guarantees that US government agencies adequately protect EU citizens' personal data". RRI can play an important role in this area, and an RRI perspective that values privacy and fundamental rights whilst balancing this against security needs can contribute to fulfilling this objective. But linking RRI to the protection of EU citizens' personal data could also be problematic as that excludes the concerns of non-EU citizens who live in Europe. An RRI perspective on privacy and fundamental rights based on European experiences and initiatives can be useful to other countries, particularly in privacy protection and the sharing of electronic health records as well as developing databases in health sector. In this I see the need for greater co-operation among those who are working on RRI and privacy issues in Europe and other countries, including India.

Science with and for Society - the SwafS Definition of RRI

The SwafS definition of RRI is:

RRI is an inclusive approach to research and innovation (R&I), to ensure that societal actors work together during the whole research and innovation process. It aims to better align both the process and outcomes of R&I, with the values, needs and expectations of *European society* (italics ours).⁴⁵

Associating RRI with the needs and expectations of European Society may make it more acceptable within Europe and give a sense that RRI is a concept that originated in Europe to meet the needs of European Society based on European values. But this conceptualization is problematic. The European Commission and many individual European countries support or sponsor R&D in products that are not needed in Europe but are urgently needed elsewhere. This includes support for drugs for tropical diseases as an example. From the Indian perspective, these would be considered as examples of RRI although they are not directly produced to meet the demands of European Society. But whether such R&D results in affordable drugs is an issue that matters for India and other countries.

Inclusion in R&I should include patient groups, users and other stakeholders. Recent literature and examples indicate that stakeholders such as patient groups are contributors to R&I and often take the initiative to raise funds for projects, donate samples and are willing to support R&I that would benefit them.⁴⁶ In India there are highly active patient groups and end-user engagement in medical research might be a promising area for global discussions of RRI.

⁴⁴http://ec.europa.eu/priorities/index_en.htm

⁴⁵<http://ec.europa.eu/programmes/horizon2020/en/h2020-section/science-and-society>

⁴⁶ The Public Shaping of Medical Research. 2014. <https://www.routledge.com/products/9780415858236>

Indicators for promoting and monitoring Responsible Research and Innovation

As a research and policy focused think tank in New Delhi, we found the *Indicators for RRI*⁴⁷ suitable for the stimulation of a global debate on RRI. The thrust towards “Open Access /Open Science” is welcome from an Indian perspective as is the RRI indicator on public participation and engagement.

In India participation could mean representation for minorities, differently abled persons and women. In some other contexts it could include participation in terms of age and age groups. Whilst India has specific legislation for “Scheduled Castes, Scheduled Tribes, Other Backward Classes” and in some contexts for women, there is no comprehensive data available on linking this strategy with funding for S&T. A *Nature* editorial recently argued that “Numbers on racial bias in research grants awarded by the US National Institutes of Health show that science has more to learn about inclusiveness.”⁴⁸ This aligns with potential issues in India such as inclusion in funding for S&T, and increasing diversity in recipients of grants and research subjects.

In India, there are dedicated schemes to promote the advancement of women in S&T. The question of developing indicators for measuring participation has to be addressed in different contexts; measuring participation through metric indicators may not give a qualitative perspective. For example, funding received by women can be measured but one cannot directly link that with wider gender issues in S&T as the data captures only one aspect. The other aspects, such as whether women scientists get funding more out of tokenism, or how such awards contribute to their individual advancement in S&T, or general gender perspectives in research and innovation cannot be captured solely through indicators. This is a problem with S&T and innovation indicators as they often fail to capture the qualitative dimension. Hence for RRI, from an Indian perspective, we need to develop more appropriate indicators and also address more qualitative dimensions.⁴⁹

Measuring the participation of women through metric indicators may not give a qualitative perspective.

In India, we will continue to work on the ideas of Access, Inclusion and Equity and examine its relevance for RRI. The ProGReSS work can be seen as a useful starting point for further shaping the discourse and practice of RRI. In the future, we will be able to understand better what RRI in theory and praxis means and contribute to that.

⁴⁷http://ec.europa.eu/research/swafs/pdf/pub_rri/rri_indicators_final_version.pdf

⁴⁸<http://www.nature.com/news/research-for-all-1.18810>

⁴⁹ Sachin Chaturvedi, Krishna Ravi Srinivas, Rashmi Rastogi. RIS discussion paper 202. Science, Technology, Innovation in India and Access, Inclusion and Equity: Discourses, Measurement and Emerging Challenges, http://ris.org.in/sites/default/files/pdf/DP202-Prof_Sachin%20Chaturvedi_and_Dr_Ravi_Srinivas.pdf

Australian Input on European RRI

Mary Walker and John Weckert, Charles Sturt University

The comments below are a response to four documents relating to European responsible research and innovation (RRI) policy and definitions.

1. *Resilient Europe – Societal Challenge 6: Europe in a changing world – inclusive, innovative and reflective societies.*⁵⁰
2. European Commission President Juncker's *Agenda for Jobs, Growth, Fairness and Democratic Change*, points 7 and 9.⁵¹
3. *Science with and for Society - the SwafS Definition of RRI* (The European Commission's H2020 Definition of RRI).⁵²
4. *Indicators for promoting and monitoring Responsible Research and Innovation: Report from the Expert Group on Policy Indicators for Responsible Research and Innovation.*⁵³



Weckert speaking at ProGReSS event in Paris and Mary Walker

These comments aim to provide a non-European perspective on how RRI is being conceptualised and discussed within the European Commission (EC). They also reflect the authors' disciplinary backgrounds in ethics. The comments of the Australian team are arranged thematically, by contrast to the other country reports in this Deliverable.

The motivation for promoting RRI

Perhaps the issue most visible when reading the four documents from a non-European perspective is a seeming tension in what is motivating discussions about RRI. On the one hand, RRI is regarded as having a role in the creation of a society that is inclusive, sustainable, innovative and reflective. These terms and the way they are discussed seem to be connected to a concern to develop a more just society, defined by values that are impartial and inclusive (e.g., Juncker's Priorities point 7; *Resilient Europe* p. 5). On the other hand, RRI aims to improve Europe in particular, to promote its economic interests and strengthen its international role and standing. For example, "Horizon 2020... will support Europe's opportunities in research, innovation and technology for developing its society and economy and for strengthening its global position" (*Resilient Europe* p. 3). This seems a fundamentally competitive aim when considered from an outside perspective.

This tension can also be seen with regard to points 7 and 9 of the EC President Juncker's Agenda. These are: "An area of justice and fundamental rights based on mutual trust"; and "A stronger global actor" respectively. Point 7 refers to ethical ideals that are usually conceived of as mandated by

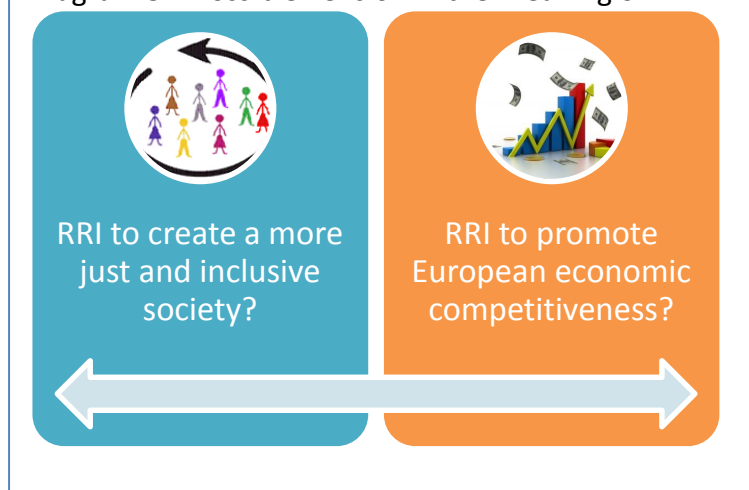
⁵⁰ <http://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/SC6-Advisory-Group%20report%20for%202016-2017.pdf>

⁵¹ http://ec.europa.eu/priorities/index_en.htm

⁵² <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/science-and-society>

⁵³ http://ec.europa.eu/research/swafs/pdf/pub_rri/rri_indicators_final_version.pdf

Diagram 3 – Possible Tension in the Meaning of RRI



systems of ethics that are objective and impartial, and as such would regard the borders of nations as morally irrelevant. But it restricts these values to the EU with its mention of “mutual trust” (presumably between EU nations). This is further reinforced in point 9 of Juncker’s Priorities, which returns to the concerns of Europe as an actor amongst other global actors.

A further example of this tension can be seen in the definition given for RRI by SwafS. There appears to be no reason to restrict RRI to “the values, needs and

expectations of *European society*” (emphasis added). Indeed, it is arguably responsible (in at least some senses of that term) to direct at least some of the research efforts of European researchers to the needs of poorer countries: both in the sense that it is morally responsible to aim to assist these countries, but also for the various benefits that strengthened economies internationally could have for the European economy.

Relatedly, throughout these documents there are shifts between presenting RRI as motivated by ethical (in the sense of value-based) concerns, and by instrumental (particularly economic) concerns. For instance, one of the aims noted in *Resilient Europe* (p. 5) is to enhance Europe’s moral strength, but this is simultaneously presented as instrumental for achieving economic prosperity. The report (p. 8) indicates that a value of reinforcing “European cohesion, unity and mutual understanding” is important because it can “assist the EU’s competitiveness, growth and attractiveness to the rest of the world”. Or again, *Resilient Europe* states an aim to “promote stability, prosperity and democracy in the countries closest to the Union and on the European continent” (p. 19) in order for Europe to be best able to face the turbulence of regional and global change.

Of course, we recognise that descriptions of the aims for the good of Europe (including its economic good) are entirely appropriate to policy documents of the EC. We expect that a similar tension would be found in the equivalent documents of any jurisdiction including Australia⁵⁴ (though they may be more visible from an outside perspective). Nonetheless it is worth recognising the practical and normative tensions that could arise:

- between promoting Europe’s interests in particular, and promoting values like inclusiveness and fairness with their connotations of impartiality;
- between competitiveness with the rest of the world and the values that lead to promoting cooperation and unity within the EU.

More generally, and in relation to the ProGReSS project, it would be useful to further clarify and make explicit the goals of RRI. In this regard the distinction between ‘responsibility’ in relation to

⁵⁴ Australian Government. 2015. *Australia’s science and research priorities*. <http://www.science.gov.au/scienceGov/news/Pages/PrioritisingAustraliasFuture.aspx>.

the methods and the contents of research, discussed in *Indicators for promoting and monitoring Responsible Research and Innovation*, could be usefully drawn upon.

Research and Innovation, Science and the Humanities

There is a lack of clarity in what ‘research and innovation’ itself refers to and it appears to differ in different documents (perhaps partly reflecting some developments and changes of focus over time). There is a tendency to run together ‘research and innovation’ and ‘science’, and to omit consideration of non-natural science research (e.g. the humanities, non-technological innovations).

There is a tendency to run together ‘research and innovation’ and ‘science’, and to omit consideration of non-natural science research (e.g. the humanities, non-technological innovations).

Resilient Europe (section 2) does discuss the use of the humanities and social sciences for understanding European identity (including its history and recent trends, cultural diversity and so on) and ‘Europeanisation’. The inclusion of the humanities under ‘research’ seems important here for a range of reasons. The humanities and social sciences are well-placed to contribute to understanding and anticipating the implications and social expectations surrounding new technologies, which is part of the H2020 definition of RRI (*SwafS Definition of RRI*). At various

points in these documents, however, the focus is entirely on the role of scientific and particularly technological change.

For example, the *SwafS Definition of RRI* specifically includes promoting science education; it does not seem clear why education in other fields should not be similarly promoted. Similarly, although “RRI training” is stated to be training that will boost capacity to be an RRI actor and “equip future researchers and other societal actors with the necessary knowledge and tools to fully participate and take responsibility in the research and innovation process” (*Indicators for promoting and monitoring Responsible Research and Innovation*, section 2.4), this text goes on to suggest that we need to boost interest in studying mathematics, the sciences, and technology (p. 29). Yet it would seem that study of other disciplines (including the humanities in particular) could be of great use in encouraging reflection on responsibility, integrity and related values.

An example of this focus as it plays out in relation to the kinds of innovations envisioned, rather than education and training, is the discussion of the need for innovation in the public sector, which focuses almost entirely on the contributions of ICT (*Resilient Europe*, section 4). There are a range of ways in which other disciplines could contribute here, however, for example in providing policy analysis, information on alternative methods of governance and regulation from international examples, social research on the effects of different approaches, and so on. This is not to deny the power of new technologies to change processes and practices in the public sector – but nor should they be expected to carry the entire burden of needed change. In another example from *Resilient Europe* (p. 15-16 section 4) it is suggested that **further utilisation of ICT will enable people to overcome social inequalities, with no acknowledgement that there are a range of other barriers marginalised people face which need to be addressed to enable them to participate.**

Another example of this limited perspective on what counts as ‘research’ is the call in *Resilient Europe* (p. 22) to provide an interface to enable ‘translation’ between humanities research and policy. **Whilst the ‘translation’ metaphor is often used in discussions of how to use research results, it is misleading, implying that decisions about policy can be ‘read off’ research results**

directly, without intervening steps.⁵⁵ But decisions about what to do always involve some evaluative decision-making, on what the goals of action are. The translation metaphor suppresses this and leads to the value-judgements behind policy-making remaining implicit and unexamined. There is a need not just for an ‘interface’ with humanities research, but to conduct the discussions about value explicitly. RRI aims to consider the ethical and social implications of new technologies, but the translation metaphor elides why this is important.

With regard to this theme as well as that above on the goals of RRI, it is certainly a positive that “social justice/inclusion” and “sustainability” have been included as areas requiring monitoring (*Indicators for promoting and monitoring Responsible Research and Innovation*). We would argue that “social justice/inclusion” is however still conceived of very narrowly. It is divided into two areas, in terms of the relationship between research subjects and researchers, and the participation of social groups in benefits arising from research (p.7). Both of these foci relate to the methods, not the contents of research. But there is research which is conducted with social justice and inclusion (and indeed, of ethics more generally) as its subject matter which could contribute to RRI goals, and it seems odd not to include any mention of this research in this document. Similarly, in Section 2.3 of the same document there is no mention of research undertaken directly into gender equality. It is very positive however that these final two indicators are included and important that they continue to be developed, as the authors of state.

We would argue that “social justice/inclusion” is however still conceived of very narrowly. It is divided into two areas, in terms of the relationship between research subjects and researchers, and the participation of social groups in benefits arising from research.

From an Australian perspective, we would argue that thinking about the original 6 key action points of RRI, especially (5) Ethics, is equally important. The authors of *Indicators for promoting and monitoring Responsible Research and Innovation* acknowledge that ethics can sometimes be taken as a set of constraints on research (p. 33). It is a very positive aspect of RRI that it has the capacity to enable a broadened ethical perspective in thinking about research, so that rather than simply seeking to ensure that research is ethically permissible, we may think about how it can not only clear that bar but become ethically praiseworthy. This applies to the methods and processes of research, but also potentially to the contents of research: whether research is progressing in ways that will help us meet ethical aims (e.g., reducing social injustice or suffering).

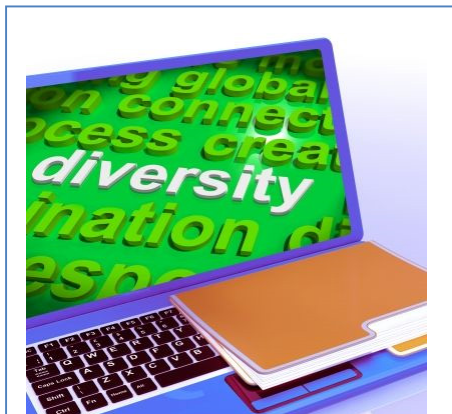
Contributions from global voices

The documents indeed raise a number of reasons to consider RRI from a more global perspective, which could be further investigated in terms of where they might impact on how RRI policy is developed. For instance, *Resilient Europe* (p. 12) notes that new models of economic cooperation using ICT may extend across international boundaries. Research communities, too, are often international (in some industries and areas more than others). Further, at least some of the Grand Challenges are issues that will require global action (e.g., climate change), and/or that will look very different when considered on the global scale (e.g., social exclusion, health). In terms of innovations in the public sector, there may also be opportunities to reduce duplication (as discussed in *Resilient Europe*, section 2) beyond Europe, e.g. with regard to therapeutic goods safety. Cooperation and

⁵⁵ Broadbent, A. 2013. *Philosophy of epidemiology*. Palgrave Macmillan, Hampshire.

coordination with countries beyond the borders of Europe would be relevant then in a variety of ways to RRI policy in different areas.

Continuing to incorporate non-European perspectives on RRI may also provide more specific information and possibilities for innovation, in drawing on the experience and learning of other nations. For instance, in relation to the aim of developing a European identity in the midst of diversity (Resilient Europe, section 2), there is a possibility that



Diversity

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engaging with literature on multiculturalism from countries such as

Australia, New Zealand, Canada and the USA could be of use.

New policies, practices and governance arrangements surrounding research and innovation, research funding processes, gender equality in research, and so on are in constant development throughout the world and can furnish examples in a range of areas that may be of use.

New policies, practices and governance arrangements surrounding research and innovation, research funding processes, gender equality in research, and so on are in constant development throughout the world and can furnish examples in a range of areas that may be of use.

Conclusion

Throughout the course of its activity, from 2013 to 2016, ProGReSS has promoted a vision of RRI as an inclusive, ethical, and sustainable research and innovation process in which the needs, values and expectations of all societal actors have to be both taken into account and considered equally.

Diagram 4 – European RRI to the World – Input from the World



In this last major Deliverable, this vision, and ProGReSS' promotion of it, is further supported by a global perspective on RRI documents that are key to the current European debate. As such, ProGReSS has taken European RRI ideas to the world and obtained input into European RRI from the world.

These global comments on European RRI documents can be considered the first step towards convergence on a global RRI framework. The documents considered were:

- Resilient Europe
- Juncker's 10 Priorities for Europe
- Swafs Definition of RRI
- Swafs Indicators for Promoting and Monitoring RRI.

ProGReSS' mission to engage actors from across the world in a dialogue around good practice in societally desirable innovation, and funding requirements for inclusive innovation in different political and economic contexts, conclude here with a collection of engaged critical remarks from each of the countries consulted. These remarks can be considered as building blocks for a convergence strategy that could make RRI a stronger and more effective framework for responsible innovation *globally*.

Some might argue that RRI is too young a framework to seek *global* convergence. However, to achieve a global framework of RRI, convergence has to be shaped and different world views have to be embedded early, otherwise the risk of conceptual imperialism is evident. The backbone of our proposal for a convergence strategy was shaped after our global network identified both omissions and positive qualities of the current European RRI framework. The following concluding remarks summarize the global voices collected from Australia, China, India, South Africa and the United States

Diagram 5 –RRI Building Blocks



and their views on the four European RRI documents. The themes that have emerged from the country reports can be summarized under four headings: inclusive, participatory, multidisciplinary, and global RRI (see diagram 5).

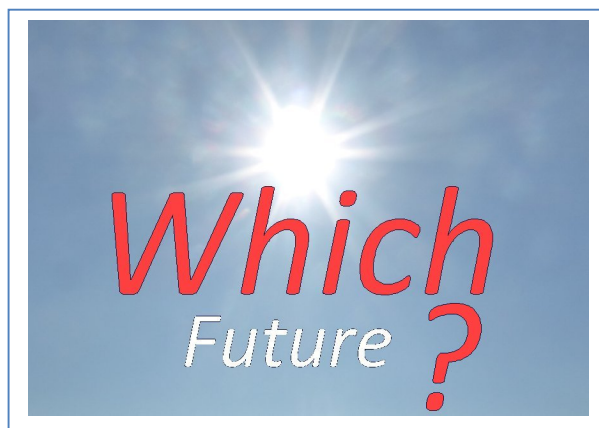
Inclusive RRI

Points of convergence

The inclusion of society's needs and expectations, and the significant involvement of citizens in all research and innovation processes are features of the European RRI framework that our commentators highly praised and welcomed.

Outstanding issues that need closer collaboration

Whilst the societal engagement processes that are envisaged in the European RRI framework were praised, a broader meaning of the word 'society' needs to be adopted or made more explicit. To give an example that was often focused upon, RRI is not only about making new products more ethically acceptable. At a higher level, it is also about the "sort of future ... we want science and innovation to bring into the world".⁵⁶ The society which RRI could help to shape, according to ProGReSS and its global commentators, should make explicit mention of the futures of women, immigrant communities, the poor, and other vulnerable and marginalised people – in other words, all those who - for cultural, political or economic reasons - have not been involved or represented in innovation processes so far, and often have not benefitted from their outcomes.



An explicit focus on these social groups is required if RRI is to be realised, in practice and in spirit.
David Kaplan, South Africa

Participatory RRI

Points of convergence

Key action points such Open Access and Open Science are appreciated for developing an improved inclusive participation model. The emphasis on mutual learning and shared discourses with the rest of the world (eg. Open to the World), especially countries with a history of integrating minorities into their political and economic structures, is noteworthy and welcome.

As a sophisticated society, as lay individuals and as user communities, we need to engage with science, scientists and innovators at all stages of the innovation process. To keep European innovation on the right track and at the ambitious scale that the planet needs, we need responsible innovators, committed scientists, and an engaged society.

Robert Madelin, European Political Strategy Centre⁵⁷

⁵⁶ Richard Owen. 2016. Keynote speech. *RRI – Shaping New Horizons*. 14 January 2016, EESC.

⁵⁷ ProGReSS Newsletter 5, available at: progressproject.eu.

Outstanding issues that need closer collaboration

Participation of all societal actors in the research and innovation process does not mean that societal actors are only involved as passive observers or passive recipients of ideas produced by others. All societal actors need to be full participants, and their inclusion in the innovation and development process should be monitored and measured.

Adoption of different economic models such as collaborative or creative economies or the economy of creative industries can encourage better patterns of participation.



Better ICT literacy and improved, user-friendly ICT products are not the only way to open up the barriers to participation of all groups in science, research and innovation. The barriers that marginalised people face, for example, can be of a different nature and ICT cannot be the only solution. All barriers to participation need to be acknowledged and addressed.

It is suggested that further utilisation of ICT will enable people to overcome social inequalities, with no acknowledgement that there are a range of other barriers marginalised people face which need to be addressed to enable them to participate.

Mary Walker and John Weckert, Australia

Multidisciplinary RRI**Points of convergence**

The emphasis on the need for ‘interfaces’ to assist policy makers and researchers, and the suggestion that social sciences and the humanities can help design those interfaces at the ‘research’ stage is to be praised.

Outstanding issues that need closer collaboration

The role of the social sciences and the humanities in making the notion of RRI operational at the policy level is under-explored.

The humanities and social sciences have a lot to contribute to Europe’s welfare and, given the importance of Europe to the world, to the world’s welfare as well.

Michael Davis and Kelly Laas, United States

It is not recommended to advocate a framework where ‘research and innovation’ and ‘science’ are often mentioned together, while non-science research (e.g. the humanities, non-technological innovations) is omitted. Missing from the multidisciplinary approach that RRI should implement is any mention of “field research”, an element that has proved valuable in supporting policy decisions in a highly innovative country (including social innovations) like China.

An overly narrow definition of the term ‘science’ prevents the consideration of alternative forms of knowledge and their incorporation into the research and innovation process. Successful examples

of co-innovation from low and middle income countries include the use of “Traditional Knowledge systems” and “Traditional world views”.

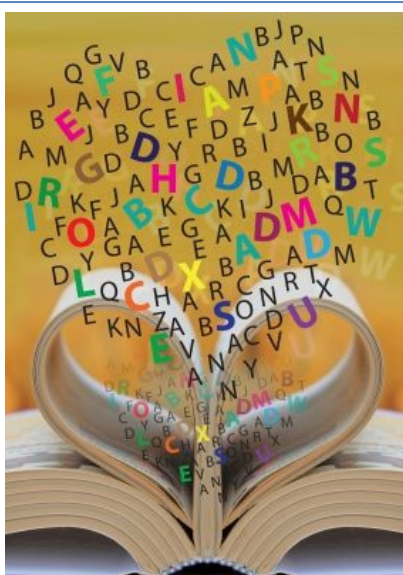
Global RRI

Points of convergence

It is noteworthy that RRI is resisting the attempt to assimilate in a unified narrative the different traditions within Europe, and the diversity brought to Europe by cultures and societies from outside Europe. The emphasis on diversity and contestation is therefore appreciated. It is utopian, however, to believe that consideration of this diversity will result in shared values – and “European values” – simply through a better research and innovation framework.

The implicit assumption is that, while there may be contestation, in the end there is (or will be) common ground of value and of interpretation of the past. However, this is seriously open to question.

David Kaplan, South Africa



Open mind

Naypong freedigitalphotos.net

Outstanding issues that need closer collaboration

A non-European perspective on European RRI has revealed a serious tension around RRI’s main aims. On the one hand, RRI is regarded as having a role in the creation of a society that is inclusive, sustainable, innovative and reflective. On the other hand, RRI aims to promote *Europe’s* economic interests and strengthen its international role and standing. These two aims could be contradictory within Europe and are most certainly so at the global level.

The European RRI model envisages a research and innovation spirit which helps create value for society by addressing citizens’ needs and expectations, and tackling major challenges. These goals cannot be achieved without a clear position about inclusiveness, equality and respect for human rights. At the same time, concepts of justice and fundamental rights are not exclusive to European society. Therefore, referring to “European values” in the formulation of the RRI approach

appears parochial from a global perspective.

Limiting RRI aims and efforts to *European* society’s needs and expectations will inevitably hinder its global outreach, in addition to being in possible contravention of the aim of competitiveness. Europe serves many global economic markets, and research and innovation which focuses solely on European needs is unlikely to be competitive internationally. Innovative products developed under the RRI framework cannot be designed and produced for European citizens only, since this approach would drastically limit the geographical range of their adoption, sale and consumption.

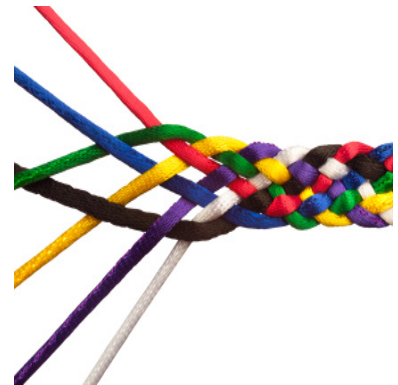
The Grand Challenges of today are similar across the world, and in many cases they require collective actions and a shared vision of what responsible, sustainable and ethical innovation means (e.g.

when tackling climate change).⁵⁸ The mandate that President Juncker has given to the senior innovation adviser in the European Political Strategy Centre (EPSC), Robert Madelin, includes reporting on “how best to position Europe as a global pro-innovation actor”⁵⁹. In looking for alternatives that could answer this question, our commentators hope that Europe will be relying more on its tradition as a “soft power”.

“Its ability to shape the world through its inventions, everything from the Union itself (the rarest of polities, an empire created by peaceful means) to the development of products, services, and standards”.

Michael Davis and Kelly Laas, United States

To conclude, and to follow Professor Kaplan’s suggestion that prioritizing between goals is the way to make the ideas proposed effective, we believe that Global RRI cannot be achieved unless Inclusive, Participatory, and Multidisciplinary RRI is made operational in the first place.



⁵⁸ See also Ladikas, M., Chaturvedi, S., Zhao, Y., Stemerding, D. (Eds.) (2015) Science and Technology Governance and Ethics - A Global Perspective from Europe, India and China, Berlin: Springer.

<http://link.springer.com/book/10.1007%2F978-3-319-14693-5>.

⁵⁹ <https://ec.europa.eu/futurium/en/content/mandate>

Appendix

Meeting on Responsible Research and Innovation

Department of Science and Technology (DST) offices, Pretoria, 25 August 2015

Present: Ben Durham (Chief Director, Biotechnology and Health Innovation, DST); Dr Andile Grootboom (Deputy Director, Indigenous Knowledge Based Technology Innovation, DST); Dr Ncebakazi Galada (Deputy Director Bio-innovation, DST); Caiphus Ramoroka (Technology Innovation Agency); Prof Rachel Wynberg (DST/NRF Bio-economy Chair, University of Cape Town); Prof David Kaplan (University of Cape Town); Jaci van Niekerk (University of Cape Town)

Agenda items

- Our understandings of Responsible Research and Innovation (RRI) and inclusive innovation
- Status of the Bio-economy Strategy
- RRI and the Bio-economy Strategy
- ASSAf: State of Biosafety and Biosecurity Report
- Introduction to EC Projects: PROGRESS and TRUST
- Advancing RRI and the bio-economy

Discussion

The background to the meeting is that the University of Cape Town, led by Rachel Wynberg, is involved in an EU project on Responsible Research and Innovation (RRI) (<http://www.progressproject.eu>) which will draw to a close in January 2016. The project is led by the University of Central Lancashire, UK. One of the themes explored is the meaning of RRI in the South African context and UCT is specifically interested in linkages between RRI and the bio-economy strategy. To this end UCT requested a meeting with DST to explore possible areas of synergy and collaboration.

The meeting was chaired and opened by **Ben Durham**, who stated that the dominant model for innovation and research was based on a 'first world' approach, whilst the reality in South Africa was very different. He expressed the belief that far too little funding was being directed at inclusive innovation.

Andile Grootboom gave an overview of a number of indigenous knowledge (IK)-based innovations and bioprospecting projects he has been involved in. Over the past eight years, bioscience programmes have been tested and concepts proven, based on the following principles:

- 1) inclusivity during implementation
- 2) beneficiation, in compliance with the National Environmental Management: Biodiversity Act (NEMBA)
- 3) community development

Collaborators hail from various institutions, including: the University of Pretoria, the Durban University of Technology, community cooperatives, and traditional healer organisations. Focus

areas include traditional medicines, food and nutraceuticals, cosmeceuticals. Andile admitted that testing some concepts had resulted in more challenges than solutions.

Caiphus Ramoroka, from the Technology Innovation Agency, said that his unit (which focuses on agriculture) studies market forces, and then conceptualises models to transfer technologies to small-scale farmers, or tries to identify projects and technologies that are appropriate for small-scale farmers.

He introduced two pilot projects:

- 1) In collaboration with the CSIR, they were exploring how to make wool quality measurement technology available and introduce methods to improve herd genetics to small-scale farmers.
- 2) The other project involved the development of new cultivars of an indigenous flower bulb. In this project, TIA and the Agricultural Research Council had decided to forgo royalty expectations, and in the interests of keeping the community project sustainable, had transferred the plant breeders' rights to a community in Nieuwoudtville.

RRI and the Bio-Economy

- The motivation to establish TIA was based on a funding gap for innovation and to investigate innovation that is not purely based on government support.
- When comparing the BRICS, economic success was still being touted as the only measure of 'success'.
- There is a recognition that not everything TIA does has to have financial returns.
- There are ring-fenced funds in TIA around the bio-economy and guidelines for its use.
- A new development in the Bio-economy Strategy is to look at socio-economic impacts rather than only financial impacts. An informal target of 5% of GDP was set as the contribution made by the bio-economy.
- It was acknowledged that economic metrics are the easiest to measure but are not necessarily the most relevant metrics. We need to look much more broadly at social and economic impacts in each component of the strategy.
- Access to markets is the biggest factor preventing development in rural areas with regard to community innovation.
- Models for community beneficiation are being piloted, but funds from treasury are necessary to make this a reality.

The ASSAf Study ON BIOSAFETY

There was discussion about the recent Academy of Science of South Africa (ASSAf) report on "*The State of Biosafety and Biosecurity in South Africa*". The state of biosafety is seen as a component of RRI, but it was questioned whether the study went far enough, as it may have been limited within a particular research community.

The Draft Bio-economy Implementation Plan

This plan is currently under development and is crosscutting across all sectors. Examples of supporting interventions are: research support, pre-commercialisation, and commercialisation phase support.

With regard to biosafety, a RRI guideline has been proposed. It cannot be more stringent than a guideline however as the research is too varied.

It is a very opportune time to increase the dialogue around RRI and the bio-economy. Not enough has been done at a public level with regard to the bio-economy strategy; it is not engaging with constituencies as much as it should.

If the plan is approved it will present further opportunities for engagement.

ProGRESS

Rachel Wynberg introduced the 3-year RRI project PROGRESS, which would wrap up in January 2016. According to PROGRESS, RRI is defined as research and innovation that is:

- ethically acceptable
- environmentally sustainable, and
- drives towards the common good, i.e. societal desirability

Next Steps

- DST are proposing a Guideline for biosafety titled “Biosafety and responsible research and innovation”; it would be useful to have further collaboration around this.
- UCT is planning to convene a wider meeting in 2016 to bring different constituencies together to begin to map the RRI landscape for implementation of the bio-economy strategy, and to identify strands that require further elaboration and research. The proposed focus is on agriculture and RRI in 2016 and we could also consider biosafety and biotechnology within the programme. Ben Durham indicated that the DST could assist with the costs of the meeting. It was agreed that Rachel would draft a concept note for the meeting.