RRI in FLAG-ERA Graphene

WORKSHOP 16 MARCH 2021 ELLEN-MARIE FORSBERG

NORSUS NORWEGIAN INSTITUTE FOR SUSTAINABILITY RESEARCH



Background – why RRI?

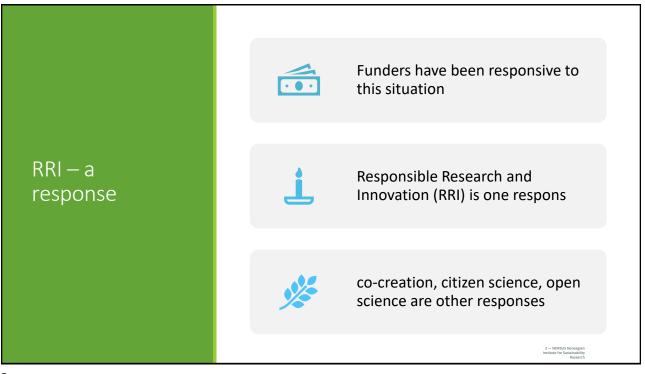
Europe wants research and innovation in order to create jobs, find solutions to societal problems, be a knowledge-based society and continue as a powerful global actor

 BUT European states and the European Union need to show that research and innovation is in the interest of the people to justify strong public investments

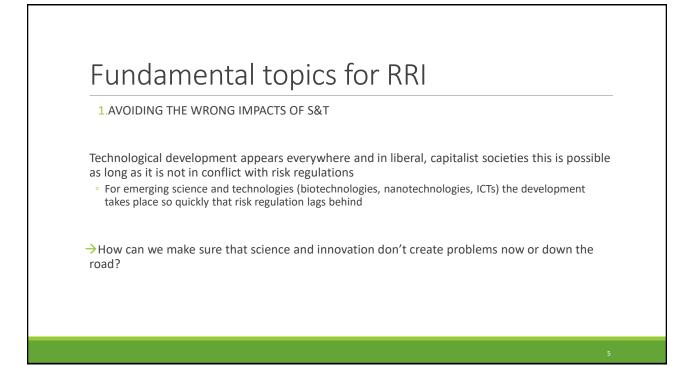
- * Experiences, such as with GMOs, have led to public resistance to new technologies
- * Research scandals or perceptions of biased research have led to public skepticism
- * Social skepticism to scientific establishment 'elites'
- → new such experiences must be avoided
 - \rightarrow by developing research policies that stimulate new reflections on responsibility within science and innovation environments themselves and by facilitating informed dialogue between scientists, innovators and the public

Trust in science is at stake!

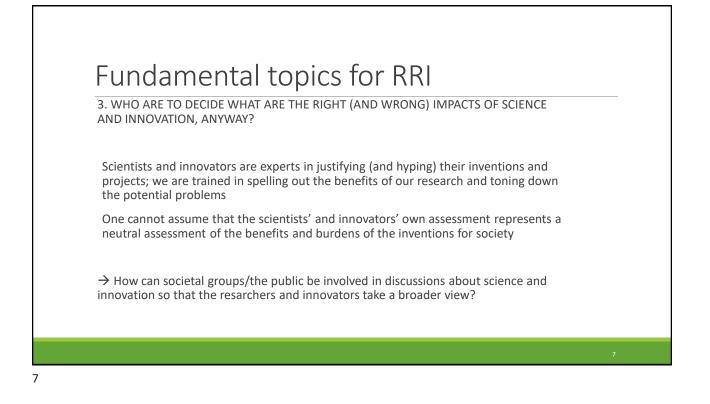




Responsi innovatio	bility and emerging technologies has been on the agenda for 30 years in research and n policy
> Biotech	nology – The Human Genome Project 1990 (ELSI program)
Nanoteo	hnology, ICTs
overall fra right	n as add-on and hostile to tech (looking for problems) \rightarrow Since 2011 RRI has been an amework for responsibility in emerging technologies in Europe – as a way to do S&I ted by research funders
≻RRI is bo	oth a theoretical, policy and practical approach





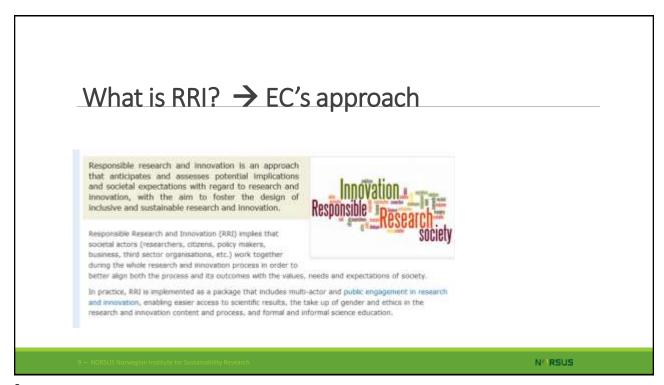


Fundamental topics for RRI

4. THE RESPONSIBILITIES OF RESEARCHERS AND INNOVATORS

- 'Science takes the credit for penicillin, while society takes the blame for the bomb' (Jerry Ravetz 1975)

 \rightarrow Many actors are involved in the research and innovation process, what are the responsibilities of the individual scientists or innovators versus all the other actors that modify how R&I meets the world?









- → Addressing societal needs
- →Avoiding undesirable side effects
- → Integrating responsibility into research and innovation practices → responsibility cannot be outsourced (but collaboration is good!)
- → Taking responsibility related to • social, environmental, ethical or political issues

Stilgoe et al., Research Policy, 2 (9) 1568-1580

Table 1

Lines of questioning on responsible innovation.

Product questions

How will the risks and benefits be distributed? What other impacts can we anticipate?

How might these change in the future? What don't we know about? What might we never know about?

Process questions

How should standards be drawn up and applied? How should risks and benefits be defined and measured?

Who is in control? Who is taking part? Who will take responsibility if things go wrong? How do we know we are right?

Purpose questions

Why are researchers doing it? Are these motivations transparent and in the public interest? Who will benefit? What are they going to gain? What are the alternatives?

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Dimension	Indicative techniques and approaches	Factors affecting implementation
Anticipation	Porenight Technology assessment Horizon scanning Scenarios Vision assessment Socio-literary techniques	Engaging with existing imaginaries Participation adher than production Plausability investment in scenario-building Scientific aumnomy and relactance to anticipate
Reflexivity	Muttidisciplinary collaboration and training Embedded social scientists and ethicists in laboratories Ethical technology assessment Codes of combact Moratoriums	Rethinking moral division of labour Enlarging or redefining role responsibilities Reflexive capacity aming scientists and within institutions Contections made between research practice and governance
Inclusion	Consensus conferences Ottoens' juries and panets Focus groups Science stops Defiberative mapping Defiberative polling	Questionable legitimacy of deliberative exercises Need for clarity about, purposes of and motivation for dialogue Deliberation on framing assumptions Ability to consider power imbalances Ability to interrogate the social and ethical stakes associated with new science and technology Quality of dialogue as a learning exercise
	Lay membership of expert bodies User-centred design Open innovation	
Responsiveness	Constitution of grand challenges and thematic research programmes Regulation Standards Open access and other mechanisms of transparency Niche management" Value-sensitive disugn Moratoriums Stage-gates" Alternative intellectual property regimes	Strategic policies and technology 'roadmaps' Science-policy culture Institutional stractow Prevailing policy discourses Institutional cultures Institutional leadership Openness and transparency Intellectual property regimes Technological standards

The RRI keys, and beyond

- 1. Gender & diversity
- 2. Open Science (open access and open data)
- Science education (increasing public understanding of science)
- 4. Ethics (research ethics and integrity)
- 5. Public Engagement
- ...

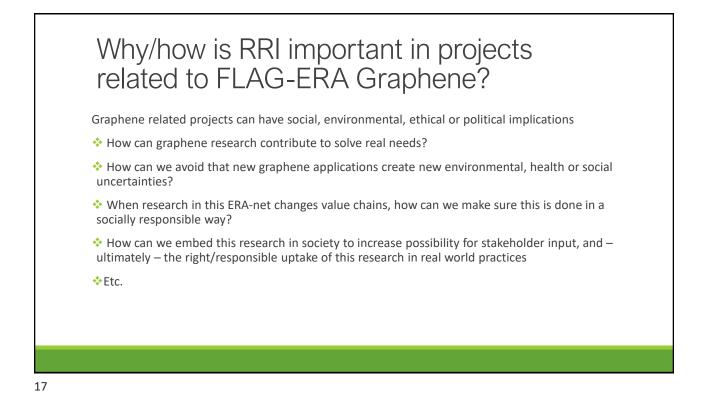
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- 1. Sustainability and the SDGs
- 2. Societal fairness and equity



What is RRI? \rightarrow EC's approach

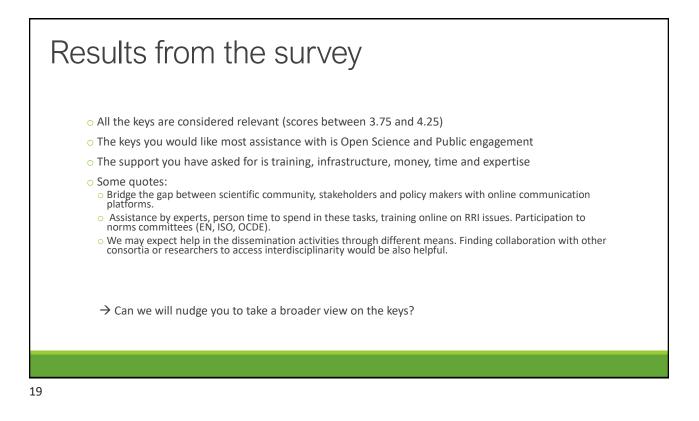
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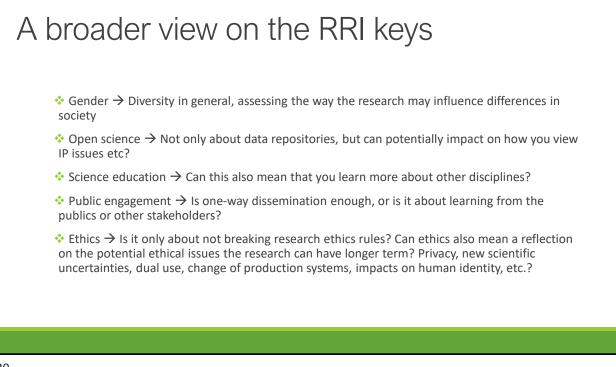


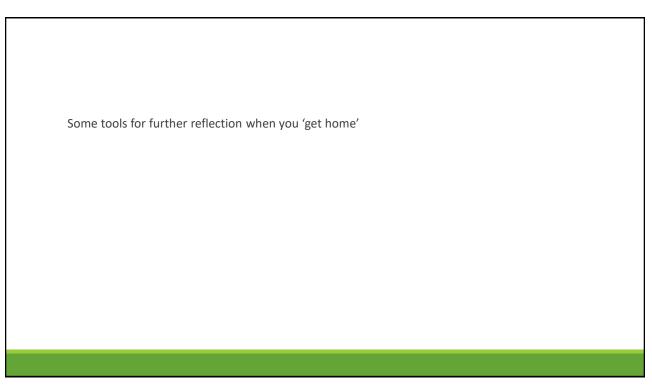
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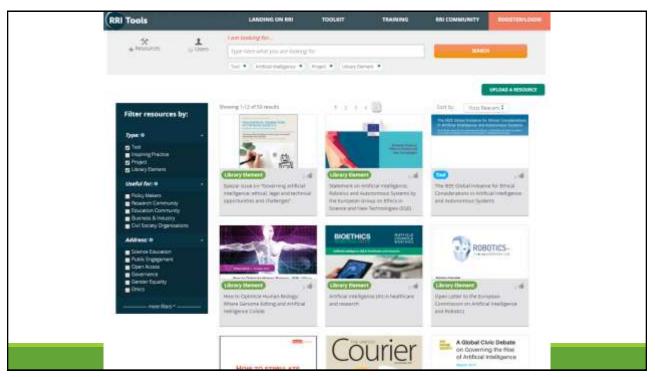


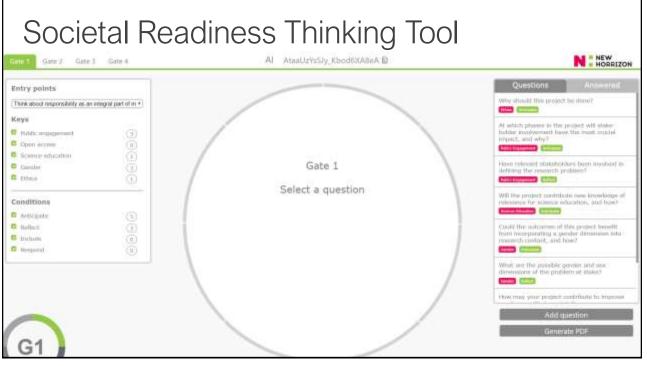


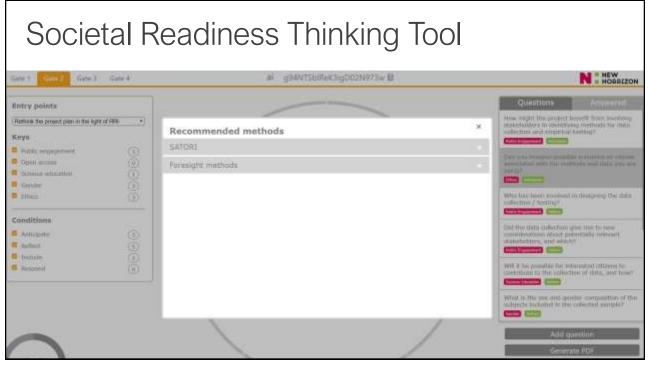












Our role today

- * Give feedback based on the survey and the presentations
- * Reflection partners in the group sessions
- * General feedback in the plenary session