Critical trends shaping science

FIT4RRI recognises a gap between the potential role and the actual impact RRI could have on European research organisations and research systems. An extensive literature review identifies interests, values, trends, drivers for and barriers to the diffusion and embedment of RRI practices and approaches in RFPOs and builds a map of the critical issues pertaining to RRI for RFPOs.

Hypercompetition

Science is becoming a hypercompetitive environment with potentially distorting effects on the research cycle.

Acceleration of research process

Researchers are under stress and pressure as working faster is a requirement for high quality research.

Increasing staffing

Contingent staff due to cost containment leads to fewer permanent positions & increased pressure for ECR in particular for female scientists.

Task diversification

Required activities (e.g. related to networking, administration, innovation & technology transfer, transparency, public scrutiny) lead to decrease in time devoted to research.

Shrinking of research funds

Competition in accessing funds and a decline in success rate for grants lead to increasing waste of time.

Increasing pressure on assessment systems

Hyperproduction of knowledge leads to systematic problems in peer review lessening its reliability. There is a problematic tendency to use quantitative indicators for assessment with distorting effects on science quality.

Increasing segmentation

Segmentation based on age/contractual status leads to decrease in productivity among young researchers, increased control over academic tasks, overtraining, decrease in teaching quality, changes in internal labour relationships, individualisation, attitude of self promotion among scientists, stratification and polarisation of academic staff.

Increasing mobility

Mobility has a critical impact on lives of researchers such as delays in accessing permanent positions, difficulties in returning to home country as well as managing family live and social ties.

Increasing openness to external actors

Rising complexity in managing RIs due to growing interaction with external actors (politics, civil society, industry) for different reasons (innovation, expertise, engagement, policy, science communication); the need to find the right level of openness; institutional undervaluation of openness-related initiatives; conceptual ambiguities and interpretive mismatches about openness; resistance and barriers to openness; decreasing trust in science.

Governance shift

Tendency to adopt entrepreneurial models for RIs, requiring a balance of different steering mechanisms; high variability in types of RIs, differentiation in terms of national contexts; strong resistance to change; need for highly participatory approaches.

Critical dynamics affecting the quality of research products

Tendency of researchers to adopt safe and low-risk research strategies and tendency to produce irrelevant science (for career advancement rather than advances in science) and redundant papers, increasing malpractice, decreasing reproducibility, undesirable impacts of commercial interests affect the quality of research products.

Barriers of RRI and Open Science

FIT4RRI analysed the main barriers to the spreading and implementation of RRI and Open Science. Four main families of barriers have been identified, on the basis of the effects they produce: barriers related to awareness; barriers related to the relevance; barriers related to the effectiveness; barriers related to sustainability.
Different factors contribute to produce these effects.

Barriers related to awareness

People do not know or are not aware of RRI.

Cultural attitudes of players

- Resistance to change
- RRI perceived as a risk
- RRI viewed as limiting academic freedom
- Self-referentiality of research institutions
- Priority given to short-term processes
- Specialisation marginalising societal issues
- Value systems marginalising societal issues
- University training approaches

Interaction between actors

- Stereotypes on other actors
- Lack of collaborative culture
- Diverging visions of societal benefits
- Conflicts between local, national & international cultures

Barriers related to relevance

RRI is not or is not perceived relevant for problems to be addressed in R&I. It is not capable to mobilise researchers & stakeholders.

Existing priority schemes

- RRI viewed as not relevant for excellence
- Pressure to publish
- Creating growth & making profit
- Open Access vs. IP/patenting
- Distrust in scientific institutions & in RRI

Dynamics of RRI incentives

- Lack of material incentives (also for non-R&I actors) & scientific recognition
- RRI as disincentive for scientific recognition
- Unclear benefits of RRI

Barriers related to effectiveness

RRI is not or is not perceived as effective to solve these same problems.

Uncertainty

- Uncertainty about concept, promoters, process and impacts of RRI

Requirements & conditions

- Lack of resources, skill & training opportunities and communication channels to implement RRI

Specific technical issues intrinsically connected to RRI implementation

- Management of public participation
- Turning RRI outputs into policies

Barriers related to sustainability

RRI is not or is not perceived as sustainable in the long run.

- Bureaucratisation
- Lack of investments
- Resistance and institutional barriers
- Inadequate policy framework
- Difficulties in defining objectives, responsibilities & implementation procedures
- Lack of evidence and data about RRI

For further details please see FIT4RRI D1.1 - Report on the Literature Review

Interpretive frames on RRI and Open Science

The analysis of the literature produced by RRI-oriented project allows to identify seven interpretative frames about RRI and Open Science which are recurrently used to mobilised researchers and research organisations:
The self-protection frame, the quality frame, the opportunity frame, the democracy frame, the management-of-the-future frame, the alignment frame and the communication frame.

Self-protection frame

RRI may help researchers and RIs to protect themselves from risks deriving from changing science-society relations (decreasing public trust & authority of science, risks of conflicts & litigation).

Quality frame

RRI may help researchers and RIs to improve the quality of R&I processes.

Opportunity frame

RRI may help researchers and RIs to seize opportunities otherwise precluded to them in terms of funding, networks, careers and skills.

Democracy frame

RRI may help citizens and stakeholders to contribute to R&I (decision) making process.

Management-of-the-future frame

RRI may help to anticipate R&I risks and benefits, so as to prevent the former and maximise the latter.

Alignment frame

RRI may help to align science and innovation with societal needs, values, interests and expectations.

Communication frame

RRI may help to communicate science to public and enhance communication among researchers.

Drivers of RRI and Open Science

FIT4RRI also analysed the main drivers to the spreading and implementation of RRI and Open Science and a set of interpretive frames explaining why RRI and Open Science should be adopted.
The analysis of scientific literature shows the presence of five different types of drivers: political, economic, social, technological, and environmental drivers.

Political drivers

Governmental and international funding programmes enhancing interaction among social actors and interdisciplinarity.

Economic drivers

Innovation policies increasingly embedding RRI in their mission, resulting in the development of better products and services, employment and economic growth.

Social drivers

Increasing demands for social inclusiveness and the management of conflicting interests which RRI could address; increasing role of social sciences and university teaching in raising awareness on RRI.

Technological drivers

RRI providing new tools for co-creation, knowledge sharing between different stakeholders and involvement of end-users in the innovation process.

Environmental drivers

Increasing investments on environmental issues also favouring RRI understood as fostering environmentally and socially sustainable research.

For further details please see FIT4RRI D1.1 - Report on the Literature Review

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