

RESPONSIBLE RESEARCH IN BIOSCIENCES: CHALLENGES FOR MAINSTREAMING

STARBIOS2 online final conference, 29 May 2020

Discussion Note

This Discussion Note is a tool to facilitate participation in the Online Final Conference. The note outlines the main objectives and the general structure of the meeting and provides some questions the speakers and the other participants can take into account.



1. The STARBIOS2 project Online Final Conference

The Online Final Conference Conference is organized in the context of the project **STARBIOS2** “Structural Transformation to Attain Responsible BIOSciences”, coordinated by the University of Rome - Tor Vergata and funded by the European Union’s Horizon 2020 Research and Innovation Programme.

The **objectives** of STARBIOS2 are:

1. To attain “structural change” – i.e., a change that we assume is comprehensive, inclusive, contextualized and irreversible –, related to **responsible research and innovation (RRI)** in 6 European institutions (in Bulgaria, Germany, Italy, Slovenia, Poland, and the United Kingdom) through the implementation of Action Plans (APs) and to develop APs for 3 international institutions active in the field of biosciences (in Brazil, South Africa, and the United States)
2. To use the implementation of APs as a **learning process** for developing a set of Guidelines on the implementation of RRI
3. To develop a **sustainable model** for RRI in biosciences.

The final event of STARBIOS2 is based on the project experience and is aimed at providing and discussing ideas about the future of responsible research in Biosciences.

This event is held at the end of a four-year work, and just as the COVID-19 pandemic is underway. We are aware that this pandemic challenges not only our societies, political systems, economic systems, but also the biosciences themselves, today and in the future, in their ability to play a key public role, to share information and to produce relevant knowledge. We are also convinced that RRI and similar approaches can provide a valuable contribution to addressing these challenges.

2. Science and society: a changing framework & the role of RRI

STARBIOS2 has carried out its activities in a context of profound transformations that affects contemporary societies. **Science and society are interconnected** entities: they have always co-evolved, but this relationship is **changing**, as part of a broader shift from Modern to so-called Post-modern (or Post-industrial, Liquid, Knowledge, etc.) society, which affects in similar ways all social institutions: politics, religion, family, state administration, and the same science.

The literature highlight a wide range of phenomena connected to this trend, for instance: globalization; weakening of previous social “structures” (rules, models of action, values and beliefs); more capacity and power of individual to think and act more freely (thanks also to the new communication technologies); exposition to risks of different kinds (climate change, weakening of welfare, etc.); great social and cultural diversification; weakening of traditional boundaries and spheres of life, and others.

In this context, we are witnessing the diminishing authority and prestige of all political, religious, even scientific institutions, together with a decline in people's trust towards these institutions (see for all the case of no-vax).

Scientific research is also profoundly transforming, experiencing a transition that has been examined and called in various ways. At the heart of this transformation, in many respects, there is the **relationship between research and the society** it belongs to. In this regard, a set of trends occurring at the global level can be observed, concerning the “way” in which science is done.

Such trends, in some cases, can generate **risks and opportunities** for both science and society. For instance: the increasing relationship between universities, governments and industries; the emergence of approaches aimed at “opening” science to society, such as citizen science; the diffusion of cooperative practices in scientific production; the increasing relevance of transdisciplinarity; the increasing expectation that scientific results have economic, social, and environmental impacts; the increasingly competitive access to public funds for research; the growing importance attached to quantitative evaluation systems based on publications, often with distorting effects and questionable results; the emergence on the international economic and technological scene of actors such as India, China, Brazil, South Africa and others.

In this context some critical issues of concern for science are, for example, career difficulties for young researchers and women in the scientific sector; the cost of publishing and the difficulties for open access; the protection of intellectual property rights.

Of course, these trends and issues manifest themselves in different ways and intensities according to the different **political, social and cultural contexts**.



Biosciences are at the crossroads in the relations between science and society, after the so-called “Biological revolution” and within the context of the “Fourth Industrial Revolution”, based on a set of “converging technologies” including genetics, robotics, info-digital, neurosciences, nanotechnologies, biotechnologies, and artificial intelligence. In this new context, more and more knowledge is produced and technological solutions are developed requiring a deeper understanding for what concerns their status, limits, and ethical and social acceptability (take the example, just to name one, of the organoids). Moreover, food security, clean energy transition, climate change, pandemics (such as the outbreak of COVID-19 today) are all challenges in which biosciences can play a crucial role, while new legal, ethical, and social questions arise that need to be dealt with.

These processes have been running for years, albeit in different ways, under the attention of decision-makers at the international level and of individual national governments. Various forms of **governance** have been developed and implemented, over time, to re-establish and harmonize the relationship between scientific and technological research and the rest of society: for example, European strategies and approaches related to Smart Specialization, Open Innovation, Open Science and **Responsible Research and Innovation** as well as those related to specific social aspects of science (such as ethical or gender).

Therefore, an approach such as **RRI** is not simply morally recommendable, but indispensable for attempting a re-alignment between scientific research and the needs of society. This is so, starting from the RRI keys (Science education, Gender equality, Public engagement, Ethics, Open access, in addition to the transversal one of Governance) which can be considered as areas of the life of scientific communities in which the criticalities or the most crucial aspects of science-society relations are more evident; and also starting from the four RRI dimensions (anticipation, inclusiveness, responsiveness, and reflexivity) which provide useful orientations for activating and driving institutional change processes in research organisations and research systems.

This governance process of elaboration and experimentation is going on, in search of increasingly relevant and effective solutions. At the same time, there is a need to encourage the **mainstreaming** of the most convincing solutions, to root them more deeply and sustainably in the complex fabric of scientific organizations and networks. In this context, the question of the mainstreaming of RRI and its application in the field of biosciences also arises.

In this sense, based also on the experience of STARBIOS2 project, RRI (and similar approaches) should be promoted and supported by specific policies, according to, at least, **four contextualization levels**.

- **Organizational contextualization** - Here mainstreaming takes place through the promotion of a greater embedment of RRI, or similar approaches, within the individual research organizations such as universities, national institutes, private centres, etc.
- **Disciplinary or sectoral contextualization** - Where mainstreaming consists in adapting the responsible research and innovation approach to a specific discipline – for example biotechnology – or to an entire “sector” in a broad sense, such as that of biosciences.
- **Geopolitical and cultural contextualization** - Here mainstreaming aims to identify forms of adaptation, or rather reshaping, RRI, or similar approaches, in the various geopolitical and cultural contexts, taking into account elements such as the features of the national research systems, the economy, territorial dynamics, local philosophy and traditions, etc.
- **Historical contextualization** - Where RRI mainstreaming is related to the ability of science to respond to the challenges that history poses from time to time – and of which the COVID-19 pandemic is only the last, serious example – and to prevent them as much as possible.





3. The STARBIOS2 experience

The STARBIOS2 project has acted within specific research organizations, active in the biosciences sector, and operating in different geopolitical and cultural contexts (Europe, US, Brazil, South Africa). The project has activated Action Plans in these organizations, in order to promote institutional, or structural, changes related to the application of the RRI, according to its various keys, for instance:

- A unified educational study programme for all faculties covering a social responsibility module, within the framework of the “Development programme of University of Gdańsk (ProUG)” project
- Professional training for young plant biotechnologists “Capacity building for moral judgement and research integrity in ABI” (Agrobioinstitute, Sofia)
- Educational modules on nanotechnology, stem cell donation, molecular biology and ecology (biodiversity loss and climate change) are reported / offered at the website of the outreach lab Backstage Science - “BaSci Lab Biology” (University of Bremen)
- New gender-related standards in publications and monitoring systems within the research organization (University of Oxford)
- Introduction of gender issues in University courses and in the interdisciplinary lessons promoted by the University Committee for Sustainable Development (e.g., Master in gender medicine 2019-2020 at University of Rome Tor Vergata)
- Kindergarten, as a tool of the strengthening career planning support programme at University of Gdańsk
- Involvement of the interdisciplinary Graduate School on Nanocompetence and the outreach lab Backstage Science as platforms for discussion about innovation (University of Bremen)
- Preparation and improvement of the Code of Conduct for biology - CCB (University of Primorska, Koper)
- The transformation of UNESCO chair in Biotechnology in the Interdisciplinary Chair in “Biotechnology and Sustainable Development” (University of Rome - Tor Vergata)
- Establishment of a working group for Open Access policy (University of Primorska, Koper)
- The establishment of a Plant Biotechnology Information Centre aimed at promoting societal engagement and science communication around emerging research, ethical, and societal issues and the establishment of contacts with public institutions and non-governmental organisations (Agrobioinstitute, Sofia).

Further Action Plans have been drafted by the three STARBIOS2 International partners, i.e., ICGEB (South Africa), University of Maryland (US) and FIOCRUZ (Brazil), touching issues like science dissemination, technology transfer and management of epidemics.

The **building blocks of the institutional or structural change activation** in research organizations are as follows: the creation of a Core team (in charge of the implementation of the Action Plans); a Context analysis; a Detailed action plan; Stakeholders mobilisation; Negotiation processes within organizations and with all stakeholders; Structural impacts and reactions to manage; Self-reflexivity (to be well aware of objectives, obstacles, timelines, opportunities, facilitating factors and risks); Technical assistance and monitoring/assessment, provided by special teams.

The latter aspects were particularly important. Indeed, in biosciences and other contexts characterised by high levels of uncertainty, innovation and social complexity, institutional change processes rarely assume a linear trajectory. Rather, they tend to be nonlinear, characterised by stops and starts, sudden progress and setbacks, unplanned solutions and deviations from the original plan. As a corollary, the implementation phase will require pro-activity, flexibility and the capacity to react rapidly to unexpected situations.

Based on the APs experience, a **learning process** was launched for developing a set of **Guidelines** on the implementation of responsible research and innovation including a sustainable model for RRI in biosciences.



4. Objectives and general structure of this online conference

The main **objectives of the conference** are:

- To present and discuss the **main results from STARBIOS2** in implementing RRI structural/ institutional change in bioscience research organizations
- To **exchange** studies, viewpoints and experiences about the relationship between science, innovation and society in Europe and other international contexts
- To launch and discuss **indications for European policies** and **networking** about the governance of science/society relations in different research fields and geographical contexts, with particular reference to the mainstreaming of the responsible research

The online conference will take place on Zoom during the day of **29 May 2020, from 9 to 17.30**.

The **general structure of the online conference** is:

- Opening Session
- Working Session 1: STARBIOS2: Different pathways to RRI
- Working Session 2: The international dimension of RRI in biosciences
- Working Session 3: Strategies and proposals on responsible research in biosciences
- Round table on policies: The mainstreaming of responsible research and innovation

An **online special event** on: “**Covid-19 and Open Science**” will take place immediately after the event, organized by the University of Rome - Tor Vergata.

5. Some questions for potential discussion

The conference focuses on **mainstreaming** of RRI and other similar approaches with particular attention to biosciences. Taking into account the framework outlined in the previous paragraphs, it is possible to identify some specific **open questions** on which to reflect in the different sessions of the event, which are briefly presented below. Some general issues have conventionally been placed within a given session, however, they can also be discussed in other sessions. Further questions proposed by the speakers will also be welcome.

Given the nature of the initiative, it will have limited time for **debate** all together. However, it will also be possible to communicate with the speakers in separate **chats** during the event.

OPENING SESSION

After the welcome address, this Opening session is focused on an introduction to the challenges for RRI in the field of bioscience and on a presentation of the STARBIOS2 concrete experience.

The issues that may be discussed in this session refer to the relationship between science and society (also taking into account the new context of COVID-19 outbreak), the role of responsible research in the field of biosciences, the 'lessons learned' emerged in the STARBIOS2 project regarding the application of responsible research in the field of biosciences, etc.

WORKING SESSION 1: STARBIOS2: DIFFERENT PATHWAYS TO RRI

This session is dedicated to a practical reflection on RRI in the field of biosciences, based on the experiences of STARBIOS2 in Europe, namely the implementation of six Action Plans aimed at producing structural/institutional changes within particular research organizations.

Among the issues to discuss are the possibility of producing lasting changes and impacts on RRI in Bioscience research organizations, the obstacles and the facilitating factors to produce these changes, the involvement of internal and external stakeholders, etc.

WORKING SESSION 2: THE INTERNATIONAL DIMENSION OF RRI IN BIOSCIENCES

The session is focused on the activity of STARBIOS2 partners from South Africa, Brazil and US and other issues and experiences related to the international dimension of RRI, or similar approaches, in the field of biosciences.

Among the issues to discuss in this session are the way to interpret and adapt RRI (its keys and dimensions) in the different geopolitical, economic and social contexts, the way to establish permanent forms of mutual learning about RRI, the emerging issues and solutions regarding health data protection at the international level, the issues related to a possible responsible technological transfer, etc.



WORKING SESSION 3: STRATEGIES AND PROPOSALS ON RESPONSIBLE RESEARCH IN BIOSCIENCES

This session is aimed at presenting and discussing the STARBIOS2 Guidelines, and other relevant viewpoints about the perspective of RRI, and other similar approaches, in Biosciences.

Among the issues to discuss are the features of an RRI model in Biosciences, the principles and strategies to be adopted by the actors who intend to promote RRI in the respective research organizations, the role of an "open" science to cope with current and future emergencies such as that of COVID-19, etc.

ROUND TABLE ON POLICIES: THE MAINSTREAMING OF RESPONSIBLE RESEARCH & INNOVATION

This concluding session is dedicated to a strategic reflection on the mainstreaming of RRI, Open Science or other approaches that intend to re-align research and society.

Among the issues to discuss are the meaning of "freedom of research" in the contemporary context, the place of responsible research (or approaches of this type) in the context of European strategies, the conditions for implementing these strategies, the different ways to contextualize RRI (or similar approaches) and enter it in the operating rules and everyday life of the research world.

ONLINE SPECIAL EVENT ON "COVID-19 AND OPEN SCIENCE"

The recent Covid-19 pandemic caused by the new coronavirus SARS-CoV2 has reinforced the data sharing, communication and collaboration within the scientific international communities challenging in a positive way the utilization of the Open Science approach and methodologies (<https://horizon-magazine.eu/article/covid-19-how-unprecedented-data-sharing-has-led-faster-ever-outbreak-research.html>). "Open Science represents a new approach to the scientific process based on cooperative work and new ways of diffusing knowledge by using digital technologies and new collaborative tools", European Commission 2016 (<https://op.europa.eu/en/publication-detail/-/publication/3213b335-1cbc-11e6-ba9a-01aa75ed71a1>). Open science aims also to make scientific research and data accessible to all. It includes publishing open scientific research, campaigning for open access and making it easier to publish and communicate scientific knowledge. It includes other ways to make science more transparent and accessible during the research process (open notebook science, citizen science, and aspects of open source software and crowdfunded research projects) (<http://www.unesco.org/new/en/communication-and-information/portals-and-platforms/goap/open-science-movement/>). This Online Special Event aims to illustrate the Open Science approach, methodologies, best practices carried out during the Covid-19 pandemic by some of the partners involved in the STARBIOS2 EU-funded Project.

Read more

STARBIOS2 website: <https://starbios2.eu/>

Download the STARBIOS2 Guideline and Model: <http://uu.diva-portal.org/smash/get/diva2:1396179/FULLTEXT01.pdf>

The STARBIOS2 Strategic Document: <https://starbios2.eu/wp-content/uploads/2020/04/strat-doc.pdf>

The programme of the Online Final Conference and registration: <https://starbios2.eu/final-event/>

