A NEW NARRATIVE FOR RESPONSIBLE INNOVATION

Executive Summary

Current definitions of Responsible Research and Innovation (RRI) do not link up with the rationalities and the language of the business sector. Instead, a new narrative is needed, focusing on business opportunities, as well as providing a business case around it.

Our new narrative consists of three elements: business' responsibility for impacts of an innovation, co-creation of innovations with a broad range of people and innovation on a systems level. On this basis, we recommend to:

1. Establish responsible innovation dialogues

2. Set up a clearing house for impact data

3. Empower citizens and foster capacity building for co-creation

4. Consider Societal Readiness Level equally important as TRL

5. Initiate a multi-stakeholder initiative on Responsible Innovation

6. Emphasize the systemic character of missions in Horizon Europe

Responsible Innovation not taken up by businesses

Innovations have a massive impact on the competitiveness of single companies and the economic development of industries and entire regions. They also fundamentally shape the way we live together, consume, work, and maintain our social relationships.

Emerging technologies, therefore, require a high level of societal acceptance, and the businesses that develop them also require a social license to operate. If this acceptance is granted, technological innovations have the potential to contribute decisively to solving the grand societal challenges of our time.

The European Union (EU) has coined the concept of "Responsible Research and Innovation (RRI)". With a total of around 300 million Euros, more than 100 projects were funded to make RRI popular and establish it among as many players as possible in the European Research Area. In the context of these projects, a variety of approaches, roadmaps, tools, and measures were developed and implemented. Most of these projects focused primarily on research driven by public actors and funded by public funds.

In contrast, innovation activities of profit-driven organisations that are conducted without public funding were rarely targeted by these EU projects. Despite the fact that 66% of EU-wide research and innovation expenditures can be attributed to the business sector (Eurostat, 2021). As a result, the question of how profit-driven organisations could be attracted to RRI quickly arose.

Most innovation managers are unaware of the RRI concept (see e.g., Auer & Jarmai, 2017, Inzelt & Csonka, 2017), regardless of the fact that many large companies periodically report on their corporate social responsibility (CSR) and set ambitious sustainability goals. Innovation managers also consider the implementation of RRI mostly as a further burden in the global competition for the "next big thing". This is also reflected in corporate practice, while CSR and sustainability have already found their way into several business functions (e.g., communications, marketing and strategy), organisational links to innovation management are not that frequent.

Why the current EU narrative is not sufficient

The definition of RRI widely used in the EU's research framework programme Horizon 2020 provides a starting point that is certainly applicable to businesses: *"RRI is an approach that anticipates and assesses potential implications and societal expectations with regard to research and innovation, with the aim to foster the design of inclusive and sustainable research and innovation."*

In contrast, **for businesses it is difficult to grasp the five thematic elements of RRI**, which are commonly used in Horizon 2020 and many of its funded projects. This became evident through a large number of interviews and discussions with C-level executives, innovation managers, and CSR or sustainability officers that we conducted in the EU LIVING INNOVATION project between 2019-2021:

1. **Public engagement** is synonymized with open innovation, crowd sourcing, and stakeholder dialogues, and it remains unclear to businesses what they are supposed to do beyond that.

2. **Open Access** is perceived to be contradictory to the self-evident interest in protecting intellectual property in a global competition.

3. **Ethical considerations** are accepted as boundaries for innovation activities, but discussing and embedding them is regarded as a societal process that cannot be carried out by a single company.

4. **Gender Issues** are considered a special case of diversity management, which is being systematically pursued in many companies.

5. **Science education** is not regarded as a task of businesses aside from vocational training, staff development, and philanthropic support of schools and universities.

The most cited operationalization of RRI in academia by Stilgoe, Owen, and Mcnaghten (2013) appealed to the practitioners in terms of its substantive approach. Its language and terminology, however, does not relate to the established terms and discourses in management and consulting. It is thus considered difficult to transfer into business practice.

Therefore, a **new narrative for Responsible Innovation in the business sector is needed**; one that directly relates to the concepts and tools widely applied in business practice, sufficiently addresses current policy documents and the academic discourse to satisfy the societal demands underpinning the RRI concept, and emphasizes opportunities for individual businesses, industries, and regions to serve as basis for an attractive business case.

The key elements of the new narrative for Responsible Innovation:

Managing Impacts of innovation means to innovate with positive impact and accept responsibility beyond markets. It increases a company's value and reduces the risks of sunken costs and societal follow up costs.

Co-creating Innovation refers to the company's responsibility to put societal needs central to innovation processes and to innovate in a truly inclusive manner. It contributes to more and better fitting ideas and tackles grand societal challenges.

A systemic perspective is the company's responsibility for future-oriented solutions and drives innovation by understanding interrelationships. It allows individual companies to become an industry game-changer and increases societal resilience and sustainbility at the same time.

Managing the impacts of Innovation

The first component of the new narrative focuses on the impacts an innovation will have on society, the environment, the economy, and our future lives. This perspective is well-known to companies, as

- it is the core of **Corporate Social Responsibility**, which means to maximize the positive impacts and to minimize the negative impacts a company has on the social and environmental systems in which it operates,
- it can be found in the **reporting standards** of the Global Reporting Initiative (GRI), on which basis most companies worldwide prepare their sustainability report. Such a report should be based on a materiality assessment of the direct and indirect, planned and unplanned, ecological, economic and social impacts,
- it is a key element of **the Greenhouse Gas Protocol**, which includes the indirect impacts of purchased goods and services, as well as the impacts of sold products and investments (i.e., Scope-3 emissions).

The business case of innovating for positive impacts lies in **increased value and reduced risks and costs**, e.g., by safeguarding the social license to operate for technologies and products. If companies innovate considering their impacts and with a clear purpose, innovation management becomes more closely linked to their values and mission.

Several tools and methods to measure and manage the impacts of innovations are at hand, such as Foresight, Technology Assessments, and Materiality Assessment.

At the societal level, considering impacts **contributes to prosperity and well-being** and avoids social follow-up costs. Think of Thalidomide, Asbestos, and nuclear power and their enormous societal costs that could have been avoided by a timely impact assessment.

Recommendation
Establish responsible innovation dialogues

The social license to operate is key for many new technologies, such as nanotechnology, genetic engineering, and artificial intelligence. Negotiating about the ethical boundaries of such technologies is of high societal concern and requires EU-wide platforms. Individual companies cannot provide such platforms, as they would lack legitimacy. Therefore, it is necessary to establish responsible innovation dialogues on the European level and to ensure that they are open to a broad range of people, experts, organisations, and stakeholders and professionally facilitated.

Recommendation
Set up a clearing house for impact data

Gathering impact data is difficult for companies, as impacts occur along value chains and during product use and disposal. Capturing the impacts of innovations is even more challenging, as their estimation is based on assumptions about possible future outcomes. It is therefore recommended to set up a clearing house for impact data at the EU level, which systematically develops datasets and promotes experience exchange and the improvement of impact assessment methods.

Impacts of Innovation	
respon-sibility	… beyond markets
innovate	… for positive impact
business case	increase value & reduce risks
societal benefits	contribute to prosperity & wellbeing
methods and tools	• Foresight • Technology Assessment • Materiality Assessment
policy recom-men-dations	• establish responsible innovation dialogues • set up a clearing house for impact data

Co-Creating Innovations

The second component highlights the participatory character of innovation processes. Co-creation goes beyond Open Innovation, Lead User Innovation, UX Design, and Design Thinking. These established approaches usually involve only lead users, employees and their families, and are strongly oriented towards the requirements of educated, wealthy, tech-savvy, young and mostly male individuals. Co-creation, in contrast, **puts societal needs central in innovation processes**, involves a broad range of people and **designs innovation processes in a truly inclusive manner** (e.g., by considering the special needs of the blind, visually impaired, elderly, poor or children). This means that the concepts of desirability and acceptability of innovation are transferred into business practice.

The business case of innovating with and for the people lies in **more and better fitting ideas**. These ideas result, in particular, from linking innovation management (focussing on result-oriented development of new technologies, products, and services) with corporate sustainability management (which is highly experienced with stakeholder dialogues).

A huge number of methods and tools for co-creation are at hand, especially in the areas of inclusive and social innovation. To ensure high quality co-creation, processes must be transparent, well communicated and have integrity. They must also prioritize participants' discussions, needs and ideas, ensure that all participants are treated with respect, and help build trusting working relationships. Therefore, co-creation requires different setups of innovation processes and additional facilitation methods and skills. As part of the LIVING INNOVATION project, we developed a toolkit for Co-Creation (see https://www.sustainability.eu/liv_in/LIV_IN _Co-Creation_Toolkit.pdf).

At the societal level, co-creating innovations **aligns the innovation capabilities of companies** – humankind's most powerful innovation powerhouse – **with the grand societal challenges** we face.

Recommendation
Empower citizens and foster capacity building for co-creation

Involving citizens and civil society organisations in innovation processes is currently difficult to realize. It is argued that external actors are not sufficiently qualified and organized to make a significant contribution and their legitimacy to participate in innovation processes is being viewed critically (see e.g., Ind et al., 2017, Bonamigo & Frech, 2020). To empower citizens, capacity building for their involvement is required, which could capitalize on the experience of the European Research and the European Innovation Council.

Recommendation
Consider Societal Readiness Level equally important as TRL

Technology Readiness Levels (TRLs) are at the heart of Horizon Europe, the largest Research and Innovation programme in the world. This currently leads to a strong focus on technology push, with societal needs and concerns tending to become side-lined. Thus, the societal readiness of technologies should be considered at the same level as the TRL and specific calls for social innovation should be launched.

Co-Creating Innovations	
respon-sibility	… to put societal needs central
innovate	… in a truly inclusive manner
business case	develop more & better ideas
societal benefits	tackle grand societal challenges
methods and tools	• Open Innovation • Design Thinking • Inclusive and social innovation
policy recom-men-dations	• empower citizens and foster capacity building • consider Societal Readiness Level

Systemic perspective

The third component broadens the perspective from innovating technologies, products, or services to the systems in which they are embedded and makes these systems the object of innovation. For example, a smart watch can become an important monitoring device in the healthcare system. A systemic perspective emphasises the **shared responsibility** of businesses and other actors **for future-oriented solutions** and grounds innovation on a deeper **understanding of interrelations and systems dynamics**. It enables companies to co-design whole systems together with stakeholders. The systemic perspective is challenging, but offers the greatest potential for positive change.

The business case for a systemic perspective lies in the competitive advantage of **becoming an industry game-changer**, as radical innovations can be more easily implemented. Instead of following and adapting to the pressures of regulations, markets, and competitors, companies can transform from rule takers to rule breakers and even rule makers. Several methods and tools refer to a systemic perspective (e.g., innovation eco-systems, systems mapping, and dynamic modelling). However, many of them are not yet widely used in the business sector.

Since the most pressing societal challenges, such as climate change, biodiversity loss, and societal conflicts, are by their very nature systemic problems, a systemic perspective in responsible innovation leads to **more sustainable and more resilient solutions**. By adapting a systemic perspective, sustainable business practices, such as the circular economy, could be implemented more quickly and effectively.

Recommendation
Initiate a multi-stakeholder initiative on Responsible Innovation

Co-designing whole systems demands the involvement of diverse actors, such as businesses, policymakers, and academia and often requires changes in consumer behaviour and societal practices. Prerequisite for this are parallel innovations that relate to each other. New collaboration platforms that also include competitors are essential for this. The role of policy-making in this regard is to act as an enabler by creating institutions for dialogue through initiating an EU-wide, multi-stakeholder initiative on Responsible Innovation (for more details, see our policy brief no. 2)

Recommendation
Emphasize the systemic character of missions in Horizon Europe

Missions are an innovative funding scheme under the new EU Horizon Europe programme aiming to tackle pressing issues around e.g., climate change, oceans, soil, and urban development. The systemic nature of these missions must be more strongly emphasised, as all these grand societal challenges are inherently systemic. Thus, a systemic perspective must be a core element of operationalising these missions so that they can serve as large-scale implementation cases of a truly systemic approach to Responsible Research and Innovation. In addition, systems thinking-based tools should support implementing missions and lessons learned on co-designing whole systems should be made available to all areas within the Horizon Europe programme and beyond.

Systemic Perspective	
respon-sibility	… to future oriented solutions
innovate	… by understanding interrelationships
business case	become an industry game-changer
societal benefits	increase societal resilience & sustainability
methods and tools	• Innovation Eco-Systems • System Mapping • Dynamic Modelling
policy recom-men-dations	• initiate a Multi-Stakeholder Initiative on RI • emphasize the systemic character of missions in Horizon Europe

A New Narrative for Responsible Innovation

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LIVING INNOVATION is one of the first industry driven initiatives on Responsible Innovation in Europe. Major companies, leading researchers and civil society organizations joined forces to explore the diverse business opportunities resulting from Responsible Innovation.

LIVING INNOVATION combines a vibrant online community with a series of on-site workshops and online dialogues. By engaging citizens and lead users, we strive to co-create the way we will live in 2030 - combining creativity and business acumen, human-centred design and responsibility.

LIVING INNOVATION develops responsible, smart solutions that tackle societal challenges and respond to pressing societal trends. It takes Responsible Innovation on a higher level by exploring the business case of Responsible Innovation and by ensuring real co-creation of sustainable solutions.

LIVING INNOVATION gives lead users and citizens the chance to be involved in the design of the technology that will shape their future lives.

LIVING INNOVATION gives industry the possibility to respond directly to changes and needs of users and society.

LIVING INNOVATION demonstrates to industry and the public what Responsible Innovation is, and how citizens can be involved in developing innovations. By directly engaging a broad diversity of citizens, both industry and society can benefit from responsible innovation. Other industries are encouraged to take up the outcomes and use them to tap co-creation and responsible innovation.