

Between Control and Complexity: RRI in the Norwegian Biotechnology Advisory Board

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Abstract: This paper investigates the integration of Responsible Research and Innovation (RRI) principles with focus on public engagement within the Norwegian Biotechnology Advisory Board (NBAB). RRI, as an inherently relational set of practices, requires flexibility and adaptability from the State to promote responsible innovation. The NBAB case study provides insights into the complexities and tensions of State intervention, highlighting the necessary shift from rigid control to a more flexible approach. This shift is crucial for effectively fostering RRI among citizens, firms, and organizations. By examining NBAB's role in evaluating and advising on the ethical implications of biotechnology, this study demonstrates the importance of inclusive and deliberative governance. The findings suggest that public institutions must adapt to changing societal needs and engage diverse stakeholders to promote responsible innovation practices effectively.

Keywords: RRI, Biotechnology, Public engagement, Norwegian biotechnology advisory board

1. Introduction

Responsible Research and Innovation (RRI) is a framework that aims to align the processes and outcomes of research and innovation with societal values, needs, and expectations. RRI emerged in response to the increasing complexity and societal impact of technological advancements (Owen, Bessant, and Heintz 2013), particularly in fields like biotechnology. Modern biotechnology and gene technology raise numerous ethical questions, necessitating ongoing interaction between science and society (Solbu 2021).

The concept of RRI goes beyond traditional ethical considerations, integrating public engagement, ethical reflection, and anticipatory governance (Von Schomberg 2013). It requires researchers, innovators, and policymakers to be responsive to societal concerns and to work collaboratively with various stakeholders, including the public, industry, and academia. This relational approach necessitates flexibility and adaptability, challenging the conventional top-down regulatory frameworks (Stilgoe, Owen, and Macnaghten 2013).

As the State is involved in various research and innovation processes, both directly and indirectly, it faces the challenge of navigating a complex and diverse landscape of responsibility. This paper explores the implementation of RRI principles within the context of the Norwegian Biotechnology Advisory Board (NBAB). The NBAB, established by the Norwegian government, is tasked with evaluating the ethical, social, and legal implications of biotechnological advancements. By analyzing the NBAB's processes and practices, this study aims to provide insights into how public institutions can operationalize RRI and foster responsible innovation.

2. Literature Review

The concept of RRI has evolved significantly over the past decades (Rip and Rip 2018), reflecting broader shifts in the governance of science and technology. Initially framed within the Ethical Legal and Social Aspects (ELSA) of emerging technologies, RRI has expanded to address the complex interplay between innovation and society. The European Union has been at the forefront of promoting RRI, embedding it in its Horizon 2020 framework to tackle Grand Societal Challenges (European Commission 2012).

RRI includes four dimensions, including anticipation, inclusiveness, reflexivity, and responsiveness (Stilgoe, Owen, and Macnaghten 2013). Anticipation involves foresight and the identification of potential impacts of research and innovation. Inclusiveness emphasizes the involvement of a diverse range of stakeholders, ensuring that different perspectives are considered. Reflexivity requires researchers and innovators to critically reflect on their practices and assumptions. Responsiveness entails adapting research and innovation processes based on societal needs and concerns.

The literature highlights the importance of public engagement in RRI, arguing that involving citizens in decision-making processes enhances the legitimacy and social acceptability of innovations (Chilvers and Kearnes 2015). However, putting RRI into practice remains challenging, requiring institutional support and cultural change within organizations.

This paper builds on existing literature by examining the integration of RRI principles within a specific institutional context, NBAB. It contributes to understanding how public institutions can foster responsible innovation through inclusive and adaptive governance.

3. Methods

This study uses an interpretative case study approach, focusing on the NBAB. Established in 1991, NBAB serves as an independent advisory body to the Norwegian government, evaluating the ethical, social, and legal implications of biotechnological advancements. The case study methodology allows for an in-depth exploration of the NBAB's processes and practices, providing insights into their implementation of RRI principles. This case was chosen to understand a broader issue: aligning innovation processes with societal needs, values, and expectations to promote responsible practices at the national level.

Data collection involved qualitative methods, including semi-structured interviews with NBAB members, analysis of official documents, and participant observation of public events organized by NBAB. The interviews aimed to capture the perspectives and experiences of NBAB members regarding the integration of RRI principles in their work. Document analysis provided additional context and understanding of NBAB's mandate and activities. Participant observation allowed for direct insights into the NBAB's deliberative processes and stakeholder engagement practices.

The data were analyzed using thematic analysis (Clarke and Braun 2017), identifying key themes and patterns related to the implementation of RRI principles. The analysis focused on how NBAB incorporates anticipation, inclusiveness, reflexivity, and responsiveness in its evaluations and practices. The study also examined the challenges and tensions encountered by NBAB in public engagement in biotechnology development.

4. Case Study: NBAB

NBAB plays a crucial role in evaluating the ethical, social, and legal implications of biotechnological advancements in Norway. Established by the Norwegian government, NBAB's mandate extends to various tasks: providing independent advice on biotechnology-related issues, fostering public debate and informing the public about biotech developments.

For internal discussions and governmental consultations, NBAB relies on evidence-based science and reports from reputable organizations. NBAB's efforts to balance expert opinions with public concerns involve a range of stakeholders, including scientists, ethicists, policymakers, and industry representatives. NBAB organizes public events, often in a format of panel debates, and provides an option on their website for submitting questions and comments. In its activities, NBAB focuses on disseminating knowledge about recent developments in biotechnology. While ensuring the legitimacy of information generated in research centers and universities is more routinized and structured, the collection of diverse opinions still has room for improvement.

The case study of NBAB highlights several key challenges in implementing RRI principles within a national framework. One significant challenge is balancing the need for expert knowledge with the importance of public engagement. It is crucial to recognize that a substantial portion of the population lacks interest in specific biotechnology topics, often relying on experts and elected officials to handle such matters. Therefore, NBAB must navigate the tensions between scientific expertise and public values, ensuring that its recommendations are both scientifically sound and socially acceptable. While solutions to these challenges are not yet fully developed, the NBAB continues to adopt a scientific approach when evaluating new knowledge.

Another challenge is maintaining flexibility and adaptability in the face of evolving biotechnological advancements. NBAB must continuously update its knowledge base and adapt its processes to address new ethical and social issues. Encouraging public participation in these discussions becomes even more challenging as individuals with high professional knowledge struggle with extrapolation. Operationalizing a broad, holistic debate proves to be a difficult and resource-demanding task. The challenge in discussing controversial topics lies in reconciling different values and beliefs, creating an environment for dialogue, and acknowledging diverse arguments.

Despite the NBAB's shortcomings in engaging the public, it possesses resources such as time, information, and expertise that the public lacks. Provided a different strategy is adopted, NBAB might be able to effectively represent public interests within the biotechnology domain.

5. Discussion

The case study of NBAB offers valuable insights into the complexities and challenges of implementing RRI principles within a national framework. The study highlights the importance of flexibility, adaptability, and stakeholder engagement in fostering responsible innovation.

A key finding is the need for public institutions to move beyond rigid control mechanisms and adopt a more relational approach to governance. RRI calls for a shift from traditional top-down regulatory frameworks to more inclusive and adaptive practices (Von Schomberg 2013). The NBAB case underlines that a focus on rapid development of knowledge-based industries may lead to the neglect of responsible governance practices. An excessive reliance on scientific expertise can undermine the primary goal of RRI— establishing trust between science and society. Overreliance on biotech experts may encourage siloed thinking, restricting the scope of discussions and limiting participation of the public in the evaluation of science and technology.

Another important finding is that engaging mainly with experts can obscure the diversity of societal concerns. The current formats of intentional dialogue with citizens – such as panel debates and written feedback – often result in one-way communication, lacking opportunities for reaction, reflection, or response. The NBAB, as a governmental agency, lacks participatory architecture necessary to support RRI activities effectively. RRI activities require a communicative framework and an institutional platform to facilitate engagement between civil society, stakeholders, and both the policy and technical communities.

Finally, shifting from a unidirectional flow of information to genuine interaction involves more than just generating a chaotic array of opinions. While diverse viewpoints are valuable, establishing a platform for structured debate is crucial. The goal of RRI isn't merely to collect a multitude of opinions, but to facilitate a continuous exchange that prompts a reevaluation of the existing status quo. Consequently, integrating mechanisms for interactivity and feedback into public engagement becomes imperative for the collaborative construction of knowledge in biotechnology domain.

6. Conclusions

In conclusion, integrating RRI principles into public institutions like the NBAB requires a shift from traditional bureaucratic practices to more adaptive and inclusive approaches (Owen et al. 2021). Currently, the evaluation of emerging technologies in decentralized and profit-oriented technology development settings is limited to a group of individuals.

The findings from this case study highlights the need for a broader understanding of the State's responsibility in fostering responsible innovation through flexibility, stakeholder engagement, and ethical reflection. The findings above strengthen the emerging argument that RRI should be understood within the framework of New Public Governance, rather than New Public Management (Loeber et al. 2022). The latter approach does not appear compatible with the demand for flexibility inherent in the relational work required by the implementation and diffusion of RRI practices. To move beyond reliance on experts and enhance public participation, it is necessary to re-think institutional boundaries. This will enable the development of responsible yet flexible governance in biotechnology, rather than a strict set of managerial principles, which may hinder the actual collaborative process of fostering RRI practices among private actors.

Further research should explore the potential role of national public institutions as platforms for communication between society and biotech stakeholders, emphasizing a network-based approach that fosters collective and relational responsibility. Additionally, the identification of RRI practices and interpretations across key organizations in the biotech industry should be investigated. This can reveal variations and commonalities in how responsibility is perceived and enacted.

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