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Chapter 3

Norwegian engagement with RRI and the propagation of RRI by the Research Council of Norway

Country profiles for the uptake and engagement with responsible research and innovation (RRI) show remarkable differences. Likewise, the role of research funders in instigating changes in the science system is widely recognised, but in the field of RRI, few studies detail efforts beyond the British Engineering and Physical Sciences Research Council (EPSRC). However, the Research Council of Norway (RCN) has been one of the few large-scale national funders wholeheartedly embracing RRI. In this chapter, we undertake a descriptive study highlighting Norwegian RRI scholarship and the role of the RCN in furthering RRI in the country. We first compare Norwegian research output on RRI to other major contributors, showing that Norwegian RRI research is surprisingly voluminous. When country size is accounted for, Norway is in the top two, only surpassed by the Netherlands. We then detail the funding schemes originally used by the RCN to further RRI in four fields of research: biotechnology, nanotechnology, ICT and digital innovation, and finally responsible innovation and CSR. We discuss evaluations of the programmes and detail funding provided for RRI activities by the RCN. We proceed by briefly touching on recent developments at the RCN. Despite significant organisational turmoil in 2022, the RCN keeps promoting RRI in very visible ways. However, funding dedicated RRI has been scaled back after a marked uptick in the mid to late 2010s. We finish with suggestions for further research.

1 Introduction

Country profiles—and imaginaries—may be more or less conducive to the uptake of RRI (Doezema et al., 2019; Randles, 2016; Ryan et al., 2021; Wittrock et al., 2021). While our knowledge of such country profiles, and divergence between countries, is growing with respect to implementation patterns, no research has to date sought to gauge the extent to which national research communities have actively engaged with RRI, using a bibliometric approach. This chapter provides initial inroads into that area of country comparison. Relatedly, the furtherance of RRI through the efforts of research funding organisations is an important driver for RRI diffusion in national, as well as global, science systems (Owen et al., 2021; Wittrock et al., 2021, p. 4). Therefore, research programmes promulgated by funders should be a cornerstone of RRI diffusion

and application. However, to our knowledge, only the European Union, the Netherlands Organisation for Scientific Research (NWO), the British Engineering and Physical Sciences Research Council (EPSRC) (now UK Research and Innovation—UKRI), and the Research Council of Norway (RCN) have wholeheartedly embraced RRI in a consistent way (Daimer et al., 2023; Wittrock et al., 2021). To this list comes the—comparatively—smaller Telethon Foundation in Italy, which specialises in rare diseases (Neresini & Arnaldi, 2018).

With respect to large national funders, the efforts of the EPSRC are well documented in a plethora of scientific works and reports (see e.g. Macnaghten & Owen, 2011; Owen et al., 2021; Wittrock & Forsberg, 2019). However, the undertakings of the NWO and the RCN so far remain documented largely in research reports (Egeland et al., 2018; van der Molen et al., 2018). In the case of the RCN, Egeland et al. (2019) additionally show how the RCN undertook RRI implementation as an organisational learning trajectory rather than, for instance, blueprint emulation. *To shed further light on engagement with RRI in Norway, and the RCN's involvement with RRI, we thus undertake an exploratory study with three foci.* First, we place the Norwegian case in the broader landscape of RRI research in terms of scientific output, considering published scholarly work on RRI. Such bibliometric analysis is commonly taken as a measure of the interest in some concept—in our case RRI (see Benders et al., 2007). This step documents that the Norwegian embrace of RRI appears to be one of the strongest worldwide in terms of measures for output and impact, particularly when the size of leading countries is taken into account. Second, we detail the undertakings of the RCN, which by far is the largest funder of research in Norway. We highlight the four flagship funding programmes the RCN originally used to promote RRI in the Norwegian innovation and science system and show the development in funding provided for projects with an RRI component. Third, we turn to recent developments within the RCN, which is characterized by encompassing organisational upheaval, but recently also an amplified effort to further RRI. While the three foci selected cannot say much about the success of RCNs pursuit of RRI, they do say something about the interest in RRI among Norwegian scientists, the considerable effort of the RCN to promote RRI, and the general weight of RRI within the RCN.

Methodology

In our analysis of Norwegian research output on RRI, we used bibliometric analysis of published scholarly work (Zupic & Čater, 2015). We employed the Web of Science (WoS) database and search terms designed to include as many relevant publications

as possible.¹ We thus followed but also significantly expanded on the work by Liu et al. (2022). Our search string is informed by but less inclusive than the one employed by Randles et al. (2022, p. 259), as we are interested in the core of RRI research and not in the genealogy of RRI. Our study contains 1,689 scientific works. Following the recommendations of Strang and Wittrock (2019), we searched both author-supplied keywords, abstract, and title. We consider published works from 2003 to 2023 (inclusive). According to the RRI genealogy study by Randles et al. (2022, p. 250), the former coincides with the first recorded use of the search terms as a central part of the scientific contribution (Hellstrom, 2003). The latter is the end of data collection for our contribution. The publication record for 2023 is not yet complete in the database used. Thus, it can be assumed that the number of entries for 2023 will increase when all publishers deliver data to our database. As a policy concept, RRI success is not straightforwardly manifested in publication output. However, publication records are credible proxies for interest in some concepts, in particular among publishing scientists (Benders et al., 2007; Strang & Wittrock, 2019). But the extent to which the documented interest in RRI delivers on the outcomes sought after by the RCN is not shown by the analysis. Likewise, our analysis does not link publication output to the efforts of the RCN in a direct manner.

In our description of the RCN's efforts to further RRI, and the subsequent changes in efforts to promote RRI, we drew on desktop research and interviews with both RCN staff and key stakeholders in Norwegian RRI (expert interviews). In addition, we had extensive email exchanges with the informants before and after interviews. In all but one case, interviews were recorded and transcribed verbatim. The processing of the thus available material elicited responses to two concerns: (1) the role of the flagship programmes that were designed to further RRI and (2) recent developments at the RCN with regards to RRI. In total, we conducted ten interviews covering most staff that were central to the development of RRI within the RCN and selected central experts. We view these as 'institutional entrepreneurs', often referred to as 'RRI Champions' in the RRI literature (e.g. Randles, 2016). Institutional entrepreneurs are actors—or groups of ac-

¹ We used the search strings: (“responsible innovation”), (“responsible research”), (“RRI” AND “innovation”) and (“RRI” AND “responsib*”) and controlled for false positives through several iterations, including screening of abstracts using Rayyan. We constructed a list of 192 terms abbreviated RRI by browsing the content of searches and employing a set of abbreviation lists from web resources to weed out false positives. A fifth search string, (“RRI” AND “research”), was considered, but since it yielded a large number of false positives, we used the residual search results that were found when it was used together by removing all results from the original set of search strings. This yielded 12 additional entries. We experimented with both the SCOPUS database and the WoS. WoS provided the opportunity to focus solely on author-provided keywords which is not possible in Scopus. Thus, in Scopus available keywords may be back-fed into the database for example by a librarian or by some automated procedure (see, e.g., Strang & Wittrock, 2019). We thus selected WoS to comply with our search strategy. Additional programmes used to assess data were the Bibliometrix R-package with the Biblioshiny interface. Further data processing was done using HistCite and VOSviewer, but we only report the main findings with respect to volume in this chapter.

tors—who initiate and participate in divergent change activities (Battilana et al., 2009). To detail the RCN's funding activities with respect to RRI, we interrogated the database publicly available on the RCN website, using the keyword facility (The Research Council of Norway, n.d.).² Following efforts to democratise science, all informants were given the opportunity to comment on the chapter.

2 Norwegian contributions in the context of global RRI scholarship: A bibliometric analysis

Figure 1 shows that RRI has been a dormant topic in terms of publication output up until 2013. Around 2014, this changes abruptly. From 2014 and onwards, there is a steep rise in publications discussing the topic. RRI is thus a discourse and science topic, which appears still on the rise. This timing largely coincides with the publication of the well-known EPSRC framework by the trio Jack Stilgoe, Richard Owen, and Phil Macnaghten (Owen et al., 2012; Stilgoe et al., 2013). Bibliometric analysis is a common choice of method in management fashion studies, used to gauge interest in some innovative concept or idea (Clark, 2004; Strang & Wittrock, 2019).

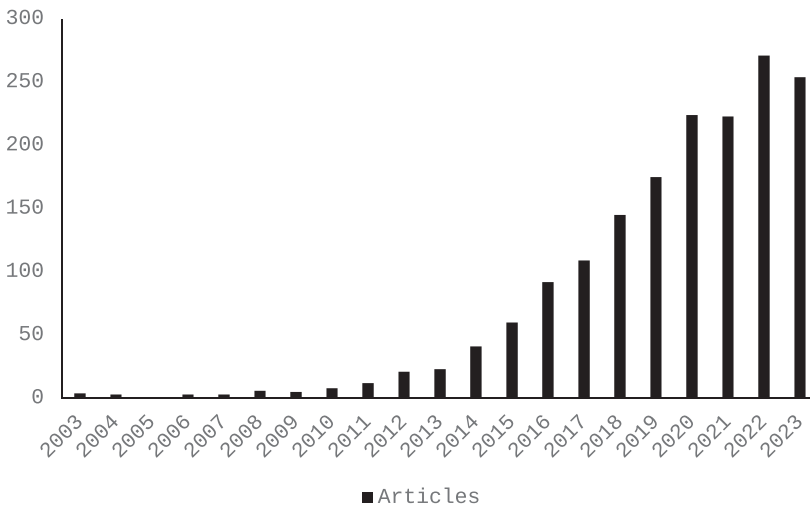


Figure 1: Global publications in our database discussing RRI 2003 to 2023.

Norwegian RRI publication output largely follows the global trend shown in Figure 1, though there is a burst in 2017 and a slump in 2020. In terms of publication output,

² Our search returns projects which use 'RRI' as a keyword in either title or abstract.

Table 1 shows that Norway is in the top ten globally in our dataset of English language scientific work, a fact that may be taken as a measure of scholarly interest in RRI in Norway.

Table 1: Research output and impact of output from top contributors.

Country	Count research output	Total Citations Ranking in ()	Average article citations Ranking in ()
USA	728	3477 (3)	16.30 (3)
UK	723	7929 (1)	31.70 (1)
NETHERLANDS	634	4887 (2)	21.20 (2)
GERMANY	309	917 (5)	8.10 (8)
CANADA	276	1125 (4)	13.60 (4)
SPAIN	245	757 (6)	9.80 (9)
ITALY	218	411 (10)	6.80 (11)
FRANCE	189	339 (11)	12.60 (5)
AUSTRALIA	179	412 (9)	8.10 (8)
NORWAY	152	654 (7)	10.20 (7)
AUSTRIA	122	468 (8)	10.60 (6)
CHINA	110	248 (12)	5.80 (12)
BELGIUM	109	208 (13)	8.30 (10)

The table shows all countries with more than 100 publications in our database of 1,689 entries. Note that entries may have mixed country authorship.

Norway is a Scandinavian country with a population of only approximately 5.5 million inhabitants (Statistisk sentralbyrå, 2024). It is thus surprising that Norway is among the top contributors to RRI research in terms of published scholarly work. In raw output measures, Table 1 shows that Norway is the tenth largest contributor. Norway by far surpasses the other Nordic countries. Where the United States is the largest contributor, with 728 scholarly works in the WoS database, Norway has produced 152 works during the period considered. However, output may also be considered in relation to impact, typically measured by citation scores. Here Norway also fares well. This is equally true, if we consider impact in the form of average citations per published work. As Table 1 shows, Norway surpasses Germany, Australia, Spain, Belgium, Italy, and China in the top ten with regards to average citations per published work.

The fact that Norway is in the top ten becomes even more impressive when figures on research output are put in perspective. Table 2 shows that the overall tertiary education sector is one of the smallest in our sample of the 13 top RRI contributors, with more than 100 published works.

In Table 3, we contrast the output from main net contributors using the number of inhabitants per country, the number of students enrolled in tertiary education, and the number of people employed in tertiary education. The two latter serve as proxies for the size of the university sector, drawing on the most recent available datasets

Table 2: Measures of relevance for RRI output comparison.

Country	# Inhabitants in mill.	# Tertiary education in millions. / 2018 (World Bank data)	# FTE in tertiary education in thousands/ 2021 (OECD data)
CHINA	1,412.000	44.935	n.a.
USA	331.900	18.941	1,072.99
GERMANY	84.607	3.127	266.31
FRANCE	67.750	2.618	*111.09
UK	67.330	2.467	159.90
ITALY	59.110	1.895	101.00
SPAIN	47.420	2.051	147.02
CANADA	38.250	1.622	n.a.
AUSTRALIA	25.690	1.677	n.a.
NETHERLANDS	17.530	0.889	60.34
BELGIUM	11.590	0.515	**21.1
AUSTRIA	8.956	0.430	31.34
NORWAY	5.553	0.288	27.01

The table shows relevant corrective measures for the evaluation of research output for all countries with more than 100 publications in our database of 1,689 entries. These are inhabitants in millions, the number of students in tertiary education in millions and the number of full-time equivalent staff in tertiary education in thousands. *France: value is for public institutions only **Belgium value for is from 2019. N.a. = not available.

from the World Bank (World Bank, 2018) and the Organisation for Economic Co-operation and Development (OECD, 2021), respectively.

In terms of published works relative to country size, the Netherlands stands out. But Norway follows on its heels and by far surpasses both Austria and the UK. Keeping in mind that the focus on RRI was spearheaded by United States, UK, and Dutch scholars, it is surprising to find Norway by far surpassing the UK in terms of research output relative to country size and as an undisputed number two globally.

If we consider the publication output relative to students enrolled in tertiary education (any degree after high school), the Netherlands stands out again. But, as shown in Table 3, Norway by far outperforms the UK, Austria, and Belgium, which are the other countries ranking high by this measure. When considering the output relative to FTE in tertiary education, the Netherlands once again distances itself from any other country, but Norway again comes second, this time with both Belgium and the UK at its heels.

Drawing on this comparison, we suggest Norway may be one of the most successful countries globally, in terms of RRI scholarship, only surpassed by the Netherlands. Norway thus appears exceptionally concerned with RRI and has contributed significantly to research on RRI, despite its small size.

Table 3: International comparison of RRI scholarship, output relative to other measures.

Country	Relative output to # Inhabitants in mill	Ranking in ()	Relative output to # in tertiary education in mill. Ranking in ()	Relative output to # FTE in tertiary education in thousands Ranking in ()
NETHERLANDS	36.17	(1)	712.75 (1)	10.50 (1)
NORWAY	27.37	(2)	526.42 (2)	5.62 (2)
AUSTRIA	13.62	(3)	283.59 (4)	3.89 (5)
UK	10.74	(4)	293.05 (3)	4.52 (4)
BELGIUM	9.40	(5)	211.43 (5)	5.16 (3)
CANADA	7.22	(6)	170.08 (6)	n.a.
AUSTRALIA	6.97	(8)	106.72 (9)	n.a.
SPAIN	5.17	(7)	119.40 (7)	1.66 (7)
ITALY	3.69	(9)	114.97 (8)	2.15 (6)
GERMANY	3.65	(10)	98.78 (10)	1.16
FRANCE	2.79	(11)	72.17 (11)	1.70
USA	2.19	(12)	38.43 (12)	0.67 (8)
CHINA	0.08	(13)	2.44 (13)	n.a.

The table shows publication output from all countries with more than 100 publications in our database of 1,689 entries, relative to inhabitants in million, the number of students in tertiary education in millions and the number of full-time equivalent staff in tertiary education in thousands, based on the best available measures.

3 The Research Council of Norway: Supporting the furtherance of RRI through four flagship programmes

The Research Council of Norway (RCN) is the result of a merger of five smaller state-governed funding agencies responsible for pursuing national research goals, as these are decided by the government and parliament in Norway (Egeland et al., 2018). The RCN is the main research funding body, and it administers research funds from almost all the Ministries in the Government and funds research in all disciplines: basic research, applied research, and innovation. Consequently, the RCN's strategy and plans for calls set the agenda for research policy in Norway (Solli, 2023).

Though the organisation has later changed, four flagship research programmes became central in the RCN strategy to promote RRI: BIOTEK2021, NANO2021, IKT-PLUSS, and SAMANSVAR (Gulbrandsen & Rynning, 2016). However, RRI thinking was an early part of the large biotechnology and nanotechnology programmes of the RCN, and all four programmes predate the announcement of their centrality for the RRI

agenda in 2016. The SAMANSVAR programme seeks to foster interdisciplinary research with a focus on Corporate Social Responsibility and RRI. The RCN saw these four programs as arenas for experimentation and learning *in collaboration with the research environments financed through the programmes*. The RCN envisioned the RRI journey as one of mutual learning (Egeland et al., 2019). However, projects with an RRI element—however large or small—have been funded in other programmes too.

After an evaluation of the activities of the RCN, the programme structure was abandoned in favour of a portfolio structure in 2019. Three of the four programmes were joined under the portfolio of ‘enabling technologies’—sometimes labelled ‘converging technologies’—and the SAMANSVAR programme was incorporated in 2021. The main argument for the organisational change was to curb silo effects. Our informants do all agree with respect to the importance of the boards of the programmes—or later portfolios. These constitute important learning arenas for the RCN and provide opportunity to engage closer with researchers and experts from both Norway and abroad. However, our informants do not agree with respect to the merits of changing from a programme structure to a portfolio structure. Some seem to think that there were too many boards in the programme structure and that the portfolio structure enabled learning across fields. Others hold that the programme structure was essential in ensuring that participants had the necessary in-depth knowledge and language from the focal field. We return to later developments below.

3.1 The BIOTEK2021 programme: solving societal challenges in a responsible manner

The primary objective of BIOTEK2021 is to generate biotechnology that contributes to value creation and innovation in order to solve societal challenges in a responsible manner (Forskningsrådet, 2013). The secondary objectives are:

1. Develop the generic elements within biotechnology, thus enabling Norwegian research groups in academia and industry to compete at an international top level (i.e. Scientific Excellence)
2. Address the various needs and special features of each sector in a manner that activates synergies and fosters cooperation (i.e. Differentiation)
3. Ensure that support is provided to areas in which biotechnology is essential for value creation and industrial development that benefits the society (i.e. Innovation)
4. Ensure the responsible development of technology that addresses global societal challenges in the areas of health and sustainable food and industrial production (i.e. Societal challenges, RRI)
5. Establish conditions that promote cooperation, constructive task distribution and highly focused research activity within Norwegian biotechnology research (i.e. Collaboration)

6. Communicate with specified target groups to ensure that biotechnology research and development are in line with the societal needs (i.e. RRI)

Thus, in the BIOTEK2021 program, RRI was pointed out as integral to several secondary objectives. This is in keeping with the National Strategy for Biotechnology 2011–2020, which states that the ethical, legal, and other social aspects of biotechnological research and development activities need to be more integrated into projects and programmes (Norwegian Ministry of Education and Research 2012). In the BIOTEK2021 program it is mandatory for project proposals to have an RRI project component. Hence, the programme has a requirement for competence building with regards to RRI through activities in projects.

The programme has funded the Centre for Digital Life Norway (DLN), a large-scale network project with a focus on building competencies in interdisciplinary—or better transdisciplinary—research in the biotech sector (Centre for Digital Life Norway, 2024). DLN constitutes an important step in the promotion of RRI. All activities under the Digital Life initiative must be underpinned by the principle and practice of RRI. In addition, the centre offers advice on RRI to projects, including tools to facilitate RRI thinking. One example is the so-called ‘walkshop’, where participants hike in one of Norway’s mountainous regions while contemplating and discussing the future of biotechnology (see Wickson et al., 2015).

The BIOTEK2021 programme was evaluated in 2017, simultaneously with the NANO2021 Programme. The overall conclusion is:

There is no doubt that RCN and the BIOTEK2021 as well as the NANO2021 programme must be in the forefront internationally when it comes to the implementation of an RRI-perspective. [. . .]. The RRI-framework developed by RCN and particularly the DLN [Digital Life Norway] is an inspiration for other funding bodies across the world (Technopolis, 2017a, p. 55).

However, the BIOTEK2021 programme evaluation also discusses tensions and polarisation emanating from the programme:

The external experts also note that the RRI theme seems to have created polarisation, requiring further efforts in this area. While the RCN’s RRI framework is based on an integration model of the science and society relation, criticisms are based on a separation model. Subscribing to either one of these models is ultimately a political question. One way of dealing with such a conflict is to demonstrate how the RRI agenda can be useful to science. Another is to find ways of demonstrating that the RRI agenda is not something new, but is built on the responsibilities already exercised by scientists and takes its point of departure in what scientists already do (Technopolis, 2017a, p. 44).

The latter solution is recommended as the most respectful one. However, the tension captures well discussions about how RRI appears to have failed in securing a compelling sale pitch (Åm, 2019b; Ribeiro et al., 2017). The evaluation also elaborates on the capacity of the programme to spread a language related to RRI. For many applicants,

the notion of RRI was unknown before applying for funding. The report cites an applicant in this way to make the point:

I was little aware of the RRI concept before the proposal process that led to the funded project. The process/project and its role in the DLN [Digital Life Norway] has led to a better understanding of the RRI concept, including revealing its chances, but also its challenges. (Funded project applicant) (Technopolis 2017a, p.35).

While the BIOTEK2021 programme is praised for its innovativeness, it is clear from the mentioned polarisation that acceptance of RRI as an institutionalised logic for biotech research and innovation was still a far cry at the time, despite any efforts of the programme (see Tolbert & Zucker, 1996). Some (successful) funding applicants relate to RRI as the brainchild of a particular clique and lament that how RRI can contribute to projects has not been explained in a convincing manner or sufficiently explained altogether. Other projects do in fact appear to engage with RRI and send their PhD candidates to the RRI school under the auspices of DLN (Technopolis, 2017a).

DLN represents a significant part of the total funding volume in the BIOTEK2021 programme. The report on the self-evaluation by DLN finds that there have been little to “*no structural changes to facilitate [. . .] the way research proposals are assessed. [T]hey are assessed ex ante, with scientific merit being evaluated separately from aspects like responsible innovation*” (Centre for Digital Life Norway & Research Council of Norway, 2019, p. 11). It also finds that RRI is often treated as a mere add-on rather than an integral part of research projects. Lamenting lack of integration is also traceable in the recommendations for future responsible innovation from the DLN self-evaluation (2019). It recommends internships in industry and changes to academic research environments; increased attention to end-users in the formulation and design of projects; regular use of sounding boards; and increased engagement from the perspective of the public good as a way to formulate research agendas. Following the path of RRI as a learning agenda, further learning was needed.

As is a central concern for the RCN, the 2020 *Technopolis* report, discussing DLN, recognises that “*RRI requires new skills for researchers, institutions need to adjust R&I governance structures, and target both processes and products of innovation*” (Varnai et al., 2020, p. 24). The report later laments that DLN appears to have no clear intervention logic while still recognising the substantial efforts of the DLN in crafting innovation and networks. An intervention logic can be modelled in a way where concrete efforts lead to specified outcomes through well-defined processes (Pawson & Tilly, 1997). However, some of our informants question the utility of such an intervention logic, either on the grounds of preferring a (mutual) learning agenda or by questioning the ‘cultural fit’ in a Norwegian setting (see e.g. Ansari et al., 2010). Their argument is then that such source-path-goal models capture messy—and often partly circular—learning processes poorly (see e.g. Kolb, 1984) and that Norwegian culture clashes with the inherent assumptions. The core of these assumptions is that it is opportune to specify the needed effort, the processes, and the goal(s) that need(s) to be achieved,

thus—potentially—stifling the free pursuit of the task as well as interpretations of what the processes and concrete task should be. Strong versions of such an approach may well inhibit learning and curb creativity (Svare et al., 2023). Some may—at an ideological level—link intervention logics to strong versions of New Public Management worldviews, though this link is not necessarily merited (Johnsen, 2024).

3.2 The NANO2021 programme: investing in research with a positive effect on societal development

The primary objective of the programme is to develop outstanding knowledge and sustainable solutions and innovations based on nanotechnology, microtechnology, and advanced materials to meet the needs of society at large (The Research Council of Norway, 2018). Secondary objectives are defined as five objectives. The programme is envisioned to:

1. Enhance innovation and national value creation based on the application of nanotechnology, microtechnology, and advanced materials
2. Enable Norwegian R&D groups to achieve a position in the international forefront and promote high quality in addition to scientific development and renewal
3. Promote responsible research and innovation in this technology field
4. Increase the attractiveness of Norwegian research groups to encourage national and international companies to establish R&D activities in Norway
5. Monitor and facilitating the use of Norway's membership of the European Synchrotron Radiation Facility (ESRF), including the Swiss Norwegian Beam Lines (SNBL) and the European Spallation Source (ESS), and work in general to promote optimal use of national infrastructure and expertise

A specific objective of the programme is thus to promote RRI in the field. Applicants to the NANO2021 programme are required to describe how relevant research questions will be addressed in relation to HSE (Health, Safety, and Environment), ELSA (Ethical, Legal, and Societal Aspects), and/or other RRI perspectives.

The RCN positions the programme as both a vehicle to fulfil the main strategy of the RCN at the time, termed 'Research for Innovation and Sustainability', and the 'Strategy for the Research Council of Norway for an innovative business sector 2016–2020'. The introductory summary thus states that:

The programme will contribute to achieve the innovation strategy's objectives by investing in research with a positive effect on societal development, and by enabling companies to take advantage of the opportunities inherent in addressing societal challenges (The Research Council of Norway, 2018, p. 4).

Thus, societal development is seen as a business opportunity.

RRI can be both a research topic in its own right—for instance, assessing the impact of new technology on society—and a practice integrated into research projects. With respect to RRI as a thematic area for research, a priority is put on “*research that expands insight into the impacts of nanomaterials on human health and ecosystems*” (The Research Council of Norway, 2018, p. 7). With respect to RRI activities integral to projects, the program furthers four key elements of risk assessment:

1. Risks associated with the extraction/production of or limited access to raw materials
2. Risks during the research, scaling-up, and/or production phases
3. Risks during the user phase
4. Risks during the demolition/recycling phase

The target of the programme is to allocate 15% of the R&D budget to RRI activities. The RCN states that a joint call with other RCN programmes focused on ELSA projects has been instrumental in increasing the share of RRI in the programme. The programme also put emphasis on social dialogue and meeting places related to the technology in question.

As part of an evaluation of the NANO2021 programme, a survey was conducted that targeted project leaders and partners. This revealed a diversity of opinions, and several of the respondents found it “*difficult to express a clear view on the impact of RRI practices as a result of the NANO2021 programme*” (Technopolis, 2017b, p. 4). To the question about how the NANO2021 program had contributed to the spreading of knowledge or increased awareness about RRI, many of the respondents answered, ‘Do not know’ or ‘Neither agree nor disagree’ (Technopolis, 2017b, p. 35). The evaluation did, however, find that there was a high awareness of RRI among researchers within the field of nanotechnology, although they did not use specific RRI terminology. This phenomenon was confirmed by the surveys and interviews alike. Such results call into question if the RRI label is necessary in order to promote what Randles (2016) has termed ‘de facto rri’. However, respondents largely agreed that having RRI as a prerequisite in the application was a good way to raise awareness about the terminology. Several of the respondents expressed positive views regarding how individual technology projects have benefitted from including an RRI component. Workshops dedicated to RRI were highlighted as a positive means for nanotechnology researchers to develop their own understanding and practices of RRI.

The evaluation report also discussed the implications of the RCN strategy of categorising RRI as one of several themes rather than as an overarching concern (like in the original IKTPLUSS programme—see section 3.3). In some instances, this causes RRI to be treated as a particular component or issue (such as Health, Safety, and Environment—HSE—and Ethical, Legal, and Societal Aspects—ELSA) organised in dedicated work packages and not as reflective processes, addressing all research aspects in the project, as envisioned in RRI. The evaluators emphasise that the RRI framework developed by RCN points to a transdisciplinary approach. They therefore argue that it

may be counter-productive to report RRI activities as one theme and by numbers (percentage of work effort) in favour of an integrated approach.

3.3 The IKTPLUSS programme: Promoting interdisciplinary research and innovation to build excellence

The IKTPLUSS programme has gone through various iterations. Here we focus on two of the early ones that show significant change. In the planning of the first version, an ‘investment logic’ is furthered, which is organised into four areas (Forskningsrådet, 2015, p. 2):

1. IKT-GRENSELAND [ICT-BORDERLAND ed.] will contribute to recruitment and stimulate more interdisciplinary groundbreaking ICT research in order to promote more cutting-edge innovations
2. IKT-FRONT [ICT-FRONT ed.] will conduct basic ICT research on relevant research topics and contribute to building capacity and robust research environments
3. IKT-VEKST [ICT-GROWTH ed.] will link research with application and contribute to growth and innovation in the ICT industry, other trade and industry, and the public sector
4. IKT-FYRTÅRN [ICT-LIGHTHOUSE ed.] will address important societal challenges by strengthening research efforts in areas where the utilisation of ICT and ICT research has a particularly high-value creation potential

The RCN as an actor in the research and innovation system is emphasised, including by reference to policy white papers, setting the agenda for Norwegian ICT research and innovation (St. Meld. 30, 2009). The programme plan states that:

It emphasises the Research Council’s role as strategic custodian of public research funding, and tries to balance this with the Research Council’s shared responsibility for safeguarding society’s and industry’s need for ICT research (Forskningsrådet, 2015, pp. 2, our translation).

In addition, three cross-cutting fundamental dimensions are emphasised as being of strategic importance:

1. Co-creation
2. Responsible Innovation
3. Internationalisation

The IKTPLUSS programme was used in a joint call with SAMANSVAR to promote interdisciplinary research in ICT with strong RRI components in a 100-million NOK call. Six projects were funded through this joint call. The guidelines accompanying the call text explicitly place emphasis on the creation of mutual and adaptive learning processes and the involvement of stakeholders (The Research Council of Norway, 2015).

However, contrary to the other programmes, we detail in this chapter, the RRI aspects appear significantly toned down in the IKTPLUSS programme description. In the revised programme plan for 2018 and onwards, the phrasing of the programme became very focused on excellence in both research and innovation and further promoted an investment logic, with a heavy focus on radical innovation (as opposed to incremental innovation). The RRI perspective is not very salient in the revised programme, though it mentions a priority on societal challenges and makes reference to sustainability, as well as to the United Nations' sustainability goals (Forskningsrådet, 2018a). The three cross-cutting fundamental dimensions of Co-creation, Responsible Innovation, and Internationalisation are gone, as is any mention of responsible innovation altogether. Thus, the RRI perspective was effectively replaced by a sustainability agenda.

We strongly suspect this should be seen as an outcome of internal struggles over conceptualisation, as has been documented in other studies of expert bureaucracies (Heusinkveld & Benders, 2005). The divergent pattern is then an outcome of a 'cultural struggle' as signified by the larger RRI discourse and drive to instigate institutional changes in the innovation and research system. As more than one interviewee pointed out: *"The RCN is not a person, body or voice, one may work in the field in different ways and contribute with important things in various ways"*. The RCN consists of people. These people, in turn, have varying theoretical and ideological commitments. They are part of departments, which change over time, as does their enrolment in various departments, their managers, etc. Some leave the RCN, and new staff – and managers alike—bring new ideas as they engage with the ones already being discussed internally. Likewise, signals from the environment change and foster adjustments or entirely new ideas and vantage points, as well as new sources of legitimacy (Strang & Bradburn, 2001). The IKTPLUSS trajectory appears to be a good example of such dynamics. Such changes curb some collaboration and development while enabling other trajectories (Stjernberg & Philips, 1993). In addition, such changes have the potential to hamper innovation trajectories that are dependent on organisational actors, such as institutional entrepreneurs. Practices that are not taken for granted in organisations usually depend on actors to confirm their validity and legitimisation (Battilana et al., 2009).

To our knowledge, the IKTPLUSS programme has not been evaluated. An evaluation of Norwegian Technical Industrial Research Institutes laments that the programme—among others—does not seem to explicitly encourage co-operation between institutes (The Research Council of Norway, 2016, p. 50).

3.4 The SAMANSVAR programme: meeting global challenges through transdisciplinary research

The primary objective of the programme is to contribute to meeting the global challenges of society through responsible technology development and socially responsible business (Forskningsrådet, 2018b). Thus, RRI is more or less enshrined as the

primary objective of the programme. In addition, the programme is clearly stated as following up on the Rome Declaration on Responsible Research and Innovation (Council of the European Union, 2014). Likewise, RRI is featured as the means to the end of meeting the global challenges of society. Three secondary objectives are defined. The programme is envisioned to:

1. Build and strengthen research training and recruitment of young researchers to the fields.
2. Promote transdisciplinary research and co-production between research, innovation, and societal development.
3. Contribute to the development of the Research Council as a socially responsible actor and strengthen the Council's work to promote social responsibility in the research and innovation system.

Point 3 is stressed again when discussing the outcomes of the programme. Here the plan further underscores that: "*SAMANSVAR will also contribute to developing the role of the Research Council and other policy actors as social actors*". (Forskningsrådet, 2018b, pp. 4, our translation). Following this ambition and learning agenda, the programme was originally planned directly under the auspices of the innovation division at the RCN and then furnished with its own board. The idea was that the programme should (also) help the RCN learn about how to further interdisciplinary—or better transdisciplinary—research and do so by cutting across the other programme boards. To our knowledge, this arrangement was terminated, when the RCN reorganised to a portfolio model (see the introduction to section 3).

The programme is explicitly staged as a sequel to the ELSA programmes and as closely tied to the enabling technologies, such as biotech, nanotechnology, and ICT technology. In addition, the programme furthers research in the field of Corporate Social Responsibility (CSR) (see chapter 7). A core idea of the programme was thus to stimulate learning between researchers working with RRI and researchers working with CSR, sharing a concern for responsibility as an integral part of practice (see chapter 1).

In keeping with the understanding of the RCN as a shaper of research and innovation, the programme states that:

The program is rooted in the emphasis on social responsibility and the Research Council's role as a social actor in the main strategy Research for innovation and sustainability. The program also follows up the Innovation Strategy and the Sustainability Strategy, where responsible research and innovation/RRI are highlighted. In the main strategy, the Council emphasizes that research and innovation must benefit society. This implies both that the research is carried out in a socially justifiable manner, and that the research contribution to meeting the major societal challenges must be emphasised (Forskningsrådet, 2018b, pp. 4, our translation).

The RCN points to two prioritised research areas and a development component in the thematic and professional priorities of the programme:

1. Research on responsible innovation
2. CSR research (“Corporate Social Responsibility”)
3. Development of socially responsible research and innovation

In keeping with RRI thinking, extensive use of user participation in projects (see chapter 8) is called for, as well as attention to research ethics. The programme financed a virtual centre envisioned as a hub for competence-building on RRI and CSR in the Norwegian context, namely the AFINO. It thus also financed the book you are currently reading. AFINO is an acronym for Ansvarlig Forskning og Innovasjon i Norge (Responsible Research and Innovation in Norway).

Following up on the RCN’s ambitions for the furtherance of RRI in Norway, AFINO has established a research school to:

help researchers and practitioners address these questions [about RRI and CSR ed.] by being a reflexive platform where the RRI and CSR communities in Norway can learn, reflect, share experiences and discuss the above topics (Blanchard, n.d.; see also chapter 5).

As of present, no evaluation has been initiated for the SAMANSVAR programme. Forsberg et al. (2021) have, however, reflected on the role of SAMANSVAR in research connected to this program and identified a potential conflict between two distinct roles that RRI might have. On the one side, RRI might be seen as a discipline, and on the other side, RRI might be understood as a logic for organising research or for research policy.

The SAMANSVAR programme had its last call in 2018 and was mainly financed by pooling money from other programmes. To date, it is by far the largest programme dedicated to RRI. In 2015 there was a large call in collaboration with IKTPLUSS (see section 3.3 above). In 2021 it was incorporated into the strategic focus area ‘enabling technologies’, or ‘converging technologies’, which includes nanotech, biotech, and ICT.

3.5 Funding provided for RRI by the Research Council of Norway

Searching the project database of the RCN reveals that a total of 77 projects that applicants describe as related to RRI have been funded as of May 2024 with a total funding volume of about 67.9 million EUR (799.2 million NOK). The funding volume has shown a steady increase since 2012 and peaks in 2020 with 103.8 mill NOK. The 2023 volume is on par with the volume in 2017. The level for 2024 appears comparatively high, and the current level of funding as of May 2024 is only 10% shy of the total funding volume for 2023. However, since funding depends on applications submitted to calls, it is too early to gauge the development for the year 2024.

While this funding volume does not necessarily reflect projects which have RRI as a central concern, we suggest the steep trend towards the peak in 2020 highlights the RCN’s growing interest in the RRI agenda. However, the total funding volume in 2020

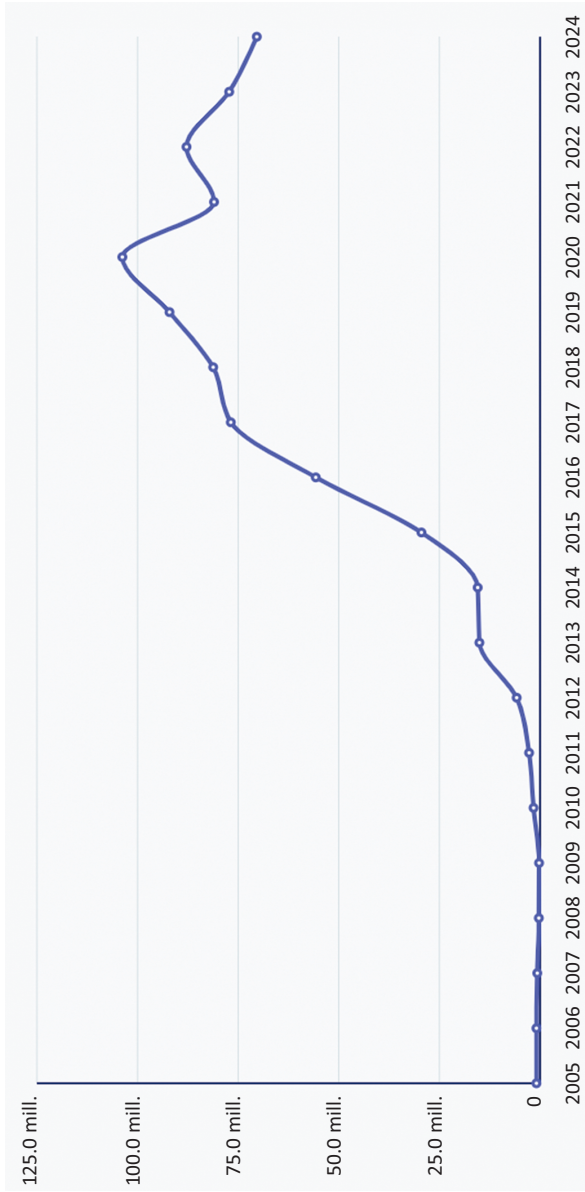


Figure 2: Funding volume of projects which applicants describe as related to RRI, funded by the RCN. (Source: The Research Council of Norway, n.d.), keyword search = 'RRI'.

was 10,400 million NOK, of which 103.8 million NOK were allocated to projects with an RRI element, representing about 1% of the total funding volume. In assessing this percentage, keep in mind that the RCN funds all types of research that usually take place in a country. Even if RRI has been supported and promoted very actively by the RCN, it has never been intended that all research that the RCN funds in its multiple programs should be versed using the RRI criterion. There is information in gauging the relationship between total funding and funding for RRI-related projects, though.

Table 4: The relative weight of funding allocated to RRI related projects by the RCN.

Year	Annual RCN funding volume in mill. NOK	Annual RRI related funding volume in mill. NOK	Percentage of funding volume allocated RRI related projects
2024	13,778.287	70.370	0.51
2023	11,299.665	77.227	0.68
2022	11,495.606	87.830	0.76
2021	11,496.160	80.984	0.70
2020	10,396.686	103.765	1.00
2019	10,056.693	92.052	0.92
2018	9,688.642	81.197	0.84
2017	9,378.002	76.821	0.82
2016	8,599.939	55.716	0.65
2015	7,835.821	29.464	0.38
2014	6,971.393	15.493	0.22
2013	6,387.573	15.066	0.24
2012	6,163.346	5.804	0.09

The table shows the relative funding volume allocated to RRI related projects, compared to total funding volume administered annually by the RCN. Data compiled from (The Research Council of Norway, n.d.).

Table 4 reveals that the relative weight of funding provided for projects which find it relevant to mention RRI in either the title or project abstract in the project description and which got funded by the RCN shows a steep rise after 2012/2014, with a height in 2020, and a subsequent decline. The relative weight of projects funded after the peak in 2020 is lower than for the year immediately after the four research programmes described were framed as the standard-bearers of RRI research in the country (Gulbrandsen & Rynning, 2016). Thus, in both net and relative fiscal measures, the promotion of RRI by the RCN appears to be waning, with current levels trending below that of 2016 in relative measures. While such measures provide no information on the actual status of RRI use in RCN-funded projects, they do provide cues with respect to the significance of the RRI label in RCN-funded projects. However, a new focus on the ramifications of AI could change the balance again, if the RRI label is used (see section 4.2).

4 Recent developments at the Research Council of Norway

In the RCN strategy for 2020-2024, RRI is specifically promoted within the fields of technology and digitalisation, health and welfare, and as an integral part of the ‘green transition’ towards a more responsible and sustainable circular economy (The Research Council of Norway, 2020). In addition, one of the five targets of the strategy is ‘Ethical and socially responsible research and innovation’. This target is described as *“research and innovation activities are carried out in compliance with recognised research ethics standards and within a socially responsible framework”* (The Research Council of Norway, 2020, p. 22). It is stated that such work includes anticipation of long-term consequences and potential unwanted effects from research undertakings.

Following the ‘Long-term plan for research and higher education 2023-2032’ issued by the Norwegian government (Meld. St. 5, 2022-2023), the RCN has published a revised strategy for 2024 (Forskningsrådet, n.d.). In this iteration, responsible innovation appears to have less prominence. However, in discussing how the RCN shall contribute to research-based knowledge necessary to meet grand challenges, it is stated that:

The enabling technologies merge and provide new opportunities, with digitalisation as a key driving force. Mastery, responsible use and development of technologies are crucial for participation, value creation, competitiveness and welfare (Forskningsrådet, n.d., pp. 4, our translation).

With variations, the message is repeated in a section on the goal area ‘Environmental, social and economic sustainability’. The document states that:

Sustainable social development is largely about meeting today’s need for just and responsible development within the tolerance limits of nature, ensuring equal opportunities for good health and quality of life, and maintaining an inclusive welfare society. New solutions are needed to rapidly reduce emissions and ensure sustainable management of the use of land and sea. New forms of cooperation across sectors must be developed to reduce inequality, counteract exclusion and maintain trust in democratic institutions (Forskningsrådet, n.d., pp. 11, our translation).

Thus, ‘de facto rri’ (Randles, 2016) appears still salient at the RCN, while the use of variations over the label or term ‘RRI’ has been toned down.

4.1 Upheaval, financial crisis, layoffs, and reorganisation

On 16 May 2022, the then-Norwegian minister for research and higher education, Ola Borten Moe, unseated the entire board of the RCN on allegations of financial misconduct at the Council. The issue was that the RCN, in the face of financial cuts in combination with demands of higher spending in order to reduce financial reserves (issued by the previous government), had engaged in auditing practices that were deemed unfit-

ting to budgeting rules in governmental organisations (Loge, 2022; Tonne et al., 2022; Trædal, 2022; Tveit, 2022). The practices had been pursued through many years and were—allegedly—well known both by the relevant public servants and previous ministers. The case caused major upheaval, both politically, in Norwegian research and higher education, and internally in the RCN. As the RCN suddenly was faced with a deficit of almost 3 billion NOK and overspending in the region of 3.5 billion, dramatic measures were needed (Javorovic, 2022; Loge, 2022; Regjeringen, 2022). The final solution had three major components: (1) a cut in research funding, as well as delaying calls and projects; 2) an extra 1.64 billion one-time appropriation to the RCN on the state budget; and 3) reorganisation and layoffs of staff at the RCN (Forskningsrådet, 2022, 2023). In the aftermath of the upheaval, the RCN was asked to save 62.8 million NOK (on top of an already installed cut of 170 million in the period 2017-2022), equalling 8.4% of the running costs (Forskningsrådet, 2023; NTB & Christensen, 2022). In addition, there was pressure to spend more money on research and less on administration. According to press coverage at the time, the cuts also came at a time when the RCN had already been stretched in terms of manpower for a while (Svarstad & Fanghol, 2022). More than 80 people accepted compensation packages to leave, and according to communication from the new board, the downsizing led to a 20% decrease in full-time equivalent (FTE) employees (Forskning.no, 2023; Forskningsrådet, 2023).

Our section 3.5 above, detailing funding allocated projects with an RRI component, shows that such appears unaffected by the financial cutbacks in 2022 due to the upheaval, which was confirmed by our informants. This, we suggest, is in itself a major achievement for the RRI cause at the RCN and points to a willingness to finance RRI-related research. Our informants generally find that the manning down did and does not have much effect on the possibility to keep promoting RRI at the RCN. Though not directly related to the upheaval at the RCN, the number of what we would call ‘institutional entrepreneurs’ most directly involved in the advocacy for RRI has been reduced from about four in 2016 to about two in 2024. However, as of today, the ‘institutional entrepreneurs’ report that they have wide support at the managerial level and thus appear successful in having built lasting alliances within the organisation. Likewise, the ‘institutional entrepreneurs’ emphasise the importance of the portfolio boards and their endorsement of, and interest in, RRI. RRI appears well beyond the ephemeral in the RCN, and RRI thinking is anchored beyond the team of institutional entrepreneurs. Likewise, the remaining ‘souls of fire’ appear highly motivated and still burning (see Stjernberg & Philips, 1993). Thus, if the team of institutional entrepreneurs have, in fact, succeeded in swaying the RCN for the RRI cause, the reduced group size could have little effect on the long-term commitment of the RCN to RRI. However, if RRI is not yet a taken-for-granted practice, the decimated group of institutional entrepreneurs could prove problematic in the future. Innovations such as the concept of RRI typically need continuous confirmation to have staying power, until it is widely adopted by a relevant group of users (Rogers, 2003). Such continuous confirmation is usually the work of a group of institutional entrepreneurs and not of

single individuals (Battilana et al., 2009). It is beyond our current study to gauge the extent to which RRI has been institutionalised at the RCN. By the word institutionalised, we do not allude to any office of RRI but think in terms of work by institutionalists like Selznick (1957) and Tolbert and Zucker (1996). Citing Tolbert and Zucker (1996), a recent review paper defines full institutionalisation as the situation where: “[. . .] the practice is taken for granted, possessing a reality of its own, and organizations adopt the practice mostly due to the incomprehensibility of alternatives” (Nau-movska et al., 2021, p. 380). As our analysis suggests, alternatives were comprehensible when the IKTPLUSS programme was refurbished in 2018. Additionally, while the new RCN strategy is saturated with typical RRI concerns, the label ‘RRI’ is not used much.

4.2 New website and further work to promote RRI

However, recently, it appears there has been an uptick—or at least continuation—in efforts to promote RRI. First, a new website has been launched in December 2023. This website, currently entitled “*Responsible research and innovation as a method*”, is to date the most comprehensive web presence of RRI at the RCN, furnished with tools and other material which helps researchers engage with RRI (The Research Council of Norway, 2024). This website is a result of learning through the years, including experience gained in international fora, not least with the development of guidelines in various ERA-NETs (see ERA4Health Partnership, n.d.; EuroNanoMed, n.d.; M-ERA.NET, n.d.), as well as an attempt to engage with some of the criticisms voiced by scientists in, for example, the evaluations of the BIOTEK2021 and NANOTEK2021 programmes, discussed in sections 3.1 and 3.2 (Technopolis, 2017a, 2017b).

The elaborate website is meant to support scientists in their ongoing engagement with RRI throughout a project, regardless of the type of project. Emphasis is put on supporting researchers with a practical guide and associated tools, making the RRI experience as concrete as possible. The website includes advice on how to include RRI in funding applications. Critics may say that the reflective emphasis has been toned down by these efforts to make RRI more concrete. However, keeping the critique of previous evaluations in mind, the website could turn out to be a credible response in the ongoing learning trajectory with RRI at the RCN.

Second, the RCN has had calls in 2022, 2023, and 2024 in the area of ‘converging technologies’ where RRI is an integral part. In the last two calls, the RCN has developed RRI supplements for the calls. While the large learning arenas AFINO and DLN are unlikely to be continued in their current forms, there has recently been a minor call for a significantly smaller learning arena focussing on ‘converging technologies’. Likewise, the RCN has continued international collaboration tied to the ERA-NETs on RRI. Thus, the RCN continues to press for RRI, though calls dedicated to RRI have been scarce since 2018. Notably, a recent focus on AI—and ramifications from AI—issued by the government with earmarked funding for research in the region of 1,000 million NOK

(Kunnskapsdepartementet & Statsministerens kontor, 2023) provides ample opportunity to carry further the RRI torch. This area will most likely become a large field of research. In addition, it appears that ethics continue to be an important theme discussed internally at the RCN. Likewise, the RCN continues to host themed information and networking opportunities for parties interested in RRI.

5 Conclusion

In this chapter, we set out *to shed light on engagement with RRI in Norway and the RCN's involvement with RRI, undertaking an exploratory study with three foci*.

First, we showed that Norwegian interest in RRI is surprisingly strong and world leading in scholarly output. Norway is the tenth largest provider of RRI scholarship globally but the second largest when country size (inhabitants), the number of students in tertiary education, and/or the number of FTE in tertiary education is taken into account, in all cases only surpassed by the Netherlands. Norway thus appears exceptionally concerned with RRI—much more so than, for instance, the UK, United States, Austria, and Germany. Our ambition with this focus was to put our case, the RCN, in perspective.

Second, we highlighted in detail the four flagship funding programmes originally theorised as the standard bearers of RRI by the Council and discussed their evaluations. All but a later iteration of the IKTPLUSS programme has RRI as a salient component. We suggested the divergent pattern of the later IKTPLUSS programme discussed here is a sign of ‘cultural struggles’ internal to the RCN with regards to the role of the Council in the research system at the time. While the BIOTECH2021 and NANO2021 programmes are praised as world leading in evaluations, the assessments also highlight tensions between the intentions of the RCN and perceptions of scientists with regards to RRI, and not least the relevance of RRI to their conduct. Such concerns are also salient in the evaluations of the DLN—a large-scale initiative to further RRI in biotechnology. Turning to an assessment of funding for RRI-related projects, we showed that the trend is a step rise from 2014 to 2020 and a subsequent decline. The 2023 level is on par with the 2017 level in fiscal magnitude (without taking inflation into account) and with the 2016 level when considering the share of funding allocated to RRI-related projects, compared to the total funding volume. As significant funding of ICT projects with a focus on the potential ramifications of AI can be expected in the future, funding for RRI-related projects may again see growth, but it is unclear if the RRI label or term will be used.

Third, we proceeded to discuss the latest developments at the RCN, marred by public scandal and a financial crisis large enough to affect the fiscal budget of the Norwegian state and significant reductions in staff. The crisis, however, appears unrelated to the RRI agenda and any endorsement of RRI thinking. Likewise, funding for

RRI-related projects appears unaffected—at least at the time of the crisis. Hence, it appears that RRI thinking has survived significant organisational turmoil at the RCN. We discussed how the effect of a reduction of staff being directly involved with RRI would depend on the extent to which RRI is actually institutionalised as a taken-for-granted practice at the RCN and the potential need for reconfirmation of RRI as an innovative approach to science governance. Either way, it is the case that the RRI agenda is still alive at the RCN and that the RCN continues to further RRI in very visible ways. Notably, a webpage designed to help researchers in engaging with RRI has recently been launched. However, while ‘de facto rri’ thinking is saturating the new RCN strategy, the use of the RRI label has been toned down.

Further research emanating from the explorative study

Our exploratory bibliometric research detailing contributions from countries raises a number of questions with regard to the vast differences uncovered. While Norway stands out, certainly, the Netherlands is a beacon in terms of RRI research. These vast national differences deserve attention, as does the potential role of (national) research funders in the differences unearthed. We suggest comparative studies of countries and the funding available for RRI-related research in various countries as a first step. However, funding is only one way that a research area may be stimulated. Soft (and hard) governance as well as the general country climate is another (Wittrock et al., 2021). Though the vast fond of knowledge on RRI developed in Norway is impressive, the *Technopolis* (2017a, 2017b) evaluations caution us that we cannot take for granted that this knowledge is transformed into ‘de facto rri’ practices in Norwegian research projects. Such links—or lack thereof—deserve further attention. Organisation science scholars have long been concerned with the extent to which academic knowledge of management and organisation is useful to practice and may serve as inspiration for a deepened understanding within the field of RRI (e.g. Astley, 1985; Daft, 1980; Kieser & Leiner, 2009; Nohria & Eccles, 1997). Another thornier question is if the fond of knowledge produced reflects the ongoing learning—and possibly even change of competencies among researchers—that the RCN envisioned or may point in other directions. If these have indeed evolved over time, it should be possible to elicit changes using not only classic scientometric analysis (see e.g. Liu et al., 2022) but also probabilistic topic modelling (Blei, 2012) or a ‘vocabularies’ approach (e.g. Ocasio & Joseph, 2005).

The research on the RCN presented here provides just a starting point for assessing their role and impact on the RRI agenda in Norwegian research and innovation projects. We hope to have shown that the RCN is a case that merits much more attention than it has previously received and endorse further studies of funding providers who have sought to promote RRI in national science systems. We touched upon the notion of ‘institutionalisation’ as this is understood in institutional theory. While the institutionalisation of RRI has been studied at the EPSRC (Owen et al., 2021), conduct-

ing similar studies at the RCN and the Dutch NWO would significantly contribute to our understanding of the role of research funders in impacting the science and innovation system.

Our study does not say much about how policy signals regarding RRI emanating from the RCN through the four programmes and subsequent revisions are ‘translated’ into actual research practices and acquire meaning in actual research projects funded through the programmes. Studies of this nature do exist (e.g. Åm, 2019a, 2019b; Åm et al., 2021; Borch & Throne-Holst, 2021; Glerup et al., 2017; Solbu, 2021; Völker et al., 2023). However, we suggest comparative studies between programmes and/or countries, as well as a clearer picture of the mechanisms at play in such translation processes, drawing from extant (organisational) theory (e.g. Ansari et al., 2010; Callon, 1984; Carlile, 2004; Latour, 1987; Oliver, 1992; Røvik, 2016) could be promising in assessing the role of funding providers’ ability to impact the research and innovation systems they support. The recent work by Völker et al. (2023) appears to be an important step in this direction.

This study regularly touches upon the function and limits of language. Importantly, the role of the RRI label, or in a term used by language theory scholars the ‘signifier’, vis a vis that which is ‘signified’, namely the actual practice of RRI or ‘de facto rri’, features often (see De Saussure, 2011). As Randles (2016) shows, the use of the RRI signifier does not necessarily cover (all) practices of RRI, as expressed by the term ‘de facto rri’. If the greater project of the RRI movement is to further ‘de facto rri’ practices and not the use of the RRI signifier—or label—the relationship between word use and practice deserves more attention. Relatedly, this insight questions the utility of developing some specific RRI framework within the vocabulary of one profession, or discipline, and ask another to conform to this particular language use (see e.g. Mills, 1940). Such insights have significance for the question of research designs capable of capturing ‘de facto rri’ practices. Likewise, we know that any theorised concept—such as RRI—needs translation in order to be practiced somewhere (Gherardi & Nicolini, 2000), and that the ‘transfer’ to practice typically involves further theorisation by practitioners (Strang & Meyer, 1993). Therefore, studies detailing how the many discussions in the field about what RRI should—ideally—be influence practices of RRI, and translation processes towards that end, would be useful.

Finally, our study suggests that the RRI agenda survived financial scarcity and organisational turmoil at the RCN, including notable political upheaval. Relatedly, Pansera and Owen (2018) warned that Brexit and political turmoil in the UK could have adverse effects on the priorities of the EPSRC, whereas the follow-up study paints a more positive picture of the state of RRI institutionalisation at the EPSRC (Owen et al., 2021). Such findings call for longitudinal studies of funding providers. Similarly, the fact that only three large-scale national funding providers in Europe and some smaller ones appear to have wholeheartedly embraced RRI begs the question: why these? Detailed accounts of their development trajectories and comparative studies will likely help us better understand how ideas salient to RRI may be furthered through funders.

Such combined efforts may allow us to specify more precisely the pathways to transformation through ‘programme theory’ which focus on mechanisms at play, taking contextual factors into account (e.g. Pawson, 2013; Pawson & Tilly, 1997), and thus provide realistic theories of change, given salient features of relevant contexts (for example relevant features of the country profile, field of research/innovation, professional vocabularies, etc.).

Empirically sustained studies, capable of eliciting mechanisms with a reach beyond the singular case or organisation, do not appear widespread in RRI research (Klaassen et al., 2018). For instance—building on our material in this chapter—even if the Netherlands, Norway, the UK, and in some cases Austria and Belgium appear highly concerned with RRI, judging from publication data, we lack clear assessments of whether in those countries that fact translates into a higher proportion of research and innovation conforming to ‘de facto rri’ principles. Likewise, it is not clear to which extent the strategy of the EC in funding an army of researchers to promote RRI through the Horizon 2020 Science with and for Society (SwafS) programme actually resulted in RRI becoming widely accepted as an approach to research and innovation in the EU (Delaney & Iagher, 2020; Wicher & Frankus, 2023). Put differently, even if RRI envisions a change in the science and innovation system globally (von Schomberg, 2013), research in the field has—to our knowledge—not yet built a convincing model to assess pathways of transformation that is based on a systems perspective. We suggest that such work could be enhanced by including further research traditions, which are traditionally concerned with questions about how change may be obtained, such as organisational science in its broadest sense, into our toolbox for the assessment of RRI diffusion, translation, and implementation.³ Thus, over time, the field of RRI could build genuinely interdisciplinary—or transdisciplinary—knowledge on orchestrated change in the science and innovation system.

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³ This suggestion should not be seen as an endorsement of ‘managerialism’ in science or higher education institutions (see, e.g., Deem & Brehony, 2005).

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