# D4.3 Blueprint for Institutional Change to Implement an Effective RRI Governance

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**ABSTRACT:** This blueprint aims at giving recommendations on what factors (drivers, barriers, good practices) to focus on when planning for and implementing an effective RRI governance system. It summarises the most relevant drivers of, the most challenging barriers to and the related good practices of the implementation of an RRI governance system within RPOs and RFOs by using data gathered through a multi-stakeholder consultation process and data obtained through the critical evaluation of the ETHNA System implementation process. The blueprint enhances the quality of the ETHNA System concept and contributes to planning and implementing more sustainable institutional changes towards a more effective RRI governance on the ground.

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| Abbreviation | |
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| **ARC Fund** | Applied Research and Communications Fund |
| **CTS** | Centre of Technology and Systems |
| **Espaitec** | Parc Científic Tecnològic i Empresarial |
| **ETHNA** | **Eth**ical Gover**na**nce of RRI in Innovation and Research Performing Organisations and Research Funding Organisations |
| **Harno** | Education and Youth Board of Estonia |
| **NTNU** | Norwegian University of Science and Technology |
| **R&I** | Research and Innovation |
| **RFO** | Research Funding Organisation |
| **RPO** | Research Performing Organisation |
| **RRI** | Responsible Research and Innovation |
| **UJI** | University Jaume I |
| **UNINOVA** | Instituto de Desenvolvimento de Novas Tecnologias |

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| **WP** | Work Package |
| **ZSI** | Centre for Social Innovation |

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# EXECUTIVE SUMMARY

This blueprint aims to give recommendations on what factors (drivers, barriers, good practices) to focus on when planning for and implementing an effective RRI governance system. It summarises the most relevant drivers of, the most challenging barriers to and the related good practices of the implementation of an RRI governance system within RPOs and RFOs by using data gathered through a multi-stakeholder consultation process and data obtained through the critical evaluation of the ETHNA System implementation process.

The **multi-stakeholder consultation** was set up and implemented with the aim of gathering detailed information from a broad range of stakeholders across Europe on **the most significant RRI governance factors (drivers, barriers, good practices)** with the help of which the draft ETHNA System concept could be made more adaptable to different organisational circumstances.

The stakeholder consultation on the ETHNA System concept was undertaken in the course of 2021 through a methodological triangulation approach of primary data sources including a **(1) questionnaire, (2) semi-structured interviews, (3) online workshops and a (4) global-scale online survey.** The outcome was a list of drivers, barriers and good practices (RRI governance factors) potentially affecting the implementation of the ETHNA System.

These **RRI governance factors were categorised into structural, cultural and interchange-related factors**. All three factors focus on different aspects within RPOs and RFOs that might contribute to or hinder RRI governance. The objective of such a categorisation was to make the analysis of the RRI governance factors stemming from the multi-stakeholder consultation more structured for the purposes of evaluating the practical findings of the ETHNA System pilot implementation process (Living Labs).

Six organisations were engaged in a pilot implementation process following the ETHNA Lab methodology in 2022. The diversity of organisations and the different approaches they undertook, as well as the wide range of outcomes they have achieved provided an excellent basis for a realistic evaluation of the ETHNA System viability.

We delve deeper into these evaluation results to provide for a more structured analysis on how to draw up an implementation plan for an effective RRI governance system which also takes into account different institutional settings. For this purpose, the defined three categories of RRI governance factors are complemented with an **additional analytical layer of organisational categorisation**. The six implementers were divided into three categories on the basis of two of their key characteristics in terms of RRI governance (‘leadership’ and ‘base’).

In this way we are able to summarise the most relevant structural, cultural and interchange-related barriers, drivers and good practices for three organisational sub-groups of ETHNA System implementers. These findings help to formulate some more general recommendations on the pre-requisites necessary to comply with in order to achieve institutional changes towards an effective RRI governance system:

**Approval and support of the leadership is crucial**

Strong leadership, i.e. the active engagement and support of the higher-level management seems to be the most significant driver without which sustainable and transferable institutional changes towards an efficient RRI governance system can be done only slowly or not at all.

**Long-term impact depends on the support structures**

It is true that the implementation may start as a top-down approach (even forced by external requirements e.g. from funding bodies), but its long-term impact ultimately relies on the bottom-up approach guaranteeing the motivation of all relevant stakeholders.

**Certain structural barriers will never disappear – you must deal with them**

In order to plan for feasible results within the given timeframe and with the available resources, the planning of an RRI governance system should start with the understanding of the broader (country) and local (organisational) context to mitigate the risk of structural barriers concerning the lack of time, persons and funding.

**Co-creation is a must but should be tailored to different organisational realities**

A co-creation process is required to ensure sustainable institutional changes but its concrete goals and specific steps should be adapted to the actual needs and opportunities of different implementing organisations.

**Feasible goals can only be set by understanding your organisational context**

The internal assessment of the organisational context in terms of RRI governance does not only help in early risk identification and mitigation but also in setting feasible goals that can be achieved within the given timeframe with the available resources.

**An incremental approach can lead to substantial changes**

While the long-term goal of the RRI governance system should be the change of culture, the impact of seemingly small-scale changes should not be underestimated. A shift in organisational culture might be achieved exactly by such actions.

Since the recommendations are all aligned with specific steps included in the final version of the **ETHNA System guide** (D6.2) therefore we recommend to use this report in conjunction with this guide. In such a way the overall lessons contained within this report might be better understood and conceptualised through the concrete measures set up and advocated within the ETHNA System guide.

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# 1 Introduction

The ETHNA System is a tool that aims at helping Research Performing Organisations (RPO) and Research Funding Organisations (RFO) to practically implement ethical governance procedures through the lens of Responsible Research and Innovation (RRI). The ETHNA System concept as a separate project deliverable (D4.2) was finalised at the end of 2021 to support the six organisations implementing the ETHNA System in a Living Lab process during 2022 (ARC Fund, Espaitec, Harno, NTNU, UJI and UNINOVA) with the detailed explanation of a modular RRI governance system, as well as practical recommendations also including concrete best practices.

RRI governance means the embedding of RRI keys (ethics, citizen science, open access, gender equality, public engagement) at management and implementation levels in RPOs and RFOs in order to achieve certain desirable organisational changes where, at the very end of the process, RRI becomes an integral part of the organisation's identity, structure and culture in a way that is not dependent on the effort of concrete persons (sustainable and transferable change). (Steen et al., 2018) In addition, it also means aligning the research activities with the four dimensions of RRI (anticipation, inclusion, reflectivity and responsiveness).

The aim of the ETHNA System concept was to foster such **a sustainable and transferable change** therefore its first draft version was updated on the basis of the results gained during a multi-stakeholder consultation conducted with relevant European RPOs and RFOs along the quadruple helix. The objective of the consultation was to understand and assess the most significant incentives, barriers, practical implementation measures and good practices concerning RRI governance. The main findings of the consultation were built into the final version of the ETHNA System concept to enhance its usability.

However, such a list of **barriers, incentives, measures and good practices** was inevitably 'theoretical' in the sense that it could only provide a beneficial framework to understand on which RRI governance factors to focus on during the Living Lab implementation phase but could not go more into detail on the specific factors (incentives and barriers) relating to different types of RPOs and RFOs.

Only after the finalisation of the Living Lab phase and the subsequent evaluation done by DBT and ARC Fund in WP5 and WP6 could more specific lessons be drawn to reflect on the actions on the ground performed by the six implementing organisations. Each organisation performed different activities and resorted to different solutions in order to develop, test and refine the ETHNA System within their own organisation, providing feedback and input for the further improvement of the ETHNA System.

The evaluation results of the Living Labs were used to assess the RRI governance factors (incentives, barriers, measures and good practices) – potentially affecting all RPOs and RFOs – discussed in the multi-stakeholder consultation in terms of their relevance in specific organisational settings with the aim of creating this blueprint summarizing the most relevant practical recommendations for an institutional change necessary to implement and manage an effective RRI governance system.

On the following pages the **multi-stakeholder consultation process** is first introduced. Second, we summarise its main findings synthesised into a theoretical framework dividing the **RRI governance factors into three main categories (structural, cultural and interchange-related).**

Then the **Living Lab process** is shortly explained, followed by the introduction of its main results where we summarise the key **structural, cultural and interchange-related RRI governance factors** that came up during the ETHNA System implementation at three different institutional settings. These three institutional settings are divided by two necessary conditions required to support and implement the ETHNA System **('base' and 'leadership').**

The report ends with **practical recommendations** on how to bring an effective RRI governance to life and foster sustainable institutional change by identifying the right incentives and tackling the most crucial barriers with appropriate measures per various organisational types of RPOs and RFOs belonging to the three institutional settings.

# 2 The Multi-Stakeholder Consultation

The draft ETHNA System concept was elaborated in the course of 2021, providing a first interpretation of the proposed competences, functions, structure and ethics governance of the system. Nonetheless, a more nuanced, evidence-based and practical guidance was missing from this draft. This was needed to better understand on how to enhance the chances of a successful RRI governance for the foreseen target group.

In order to make the concept adaptable to different organisational circumstances, **key organisational factors advancing or hindering the uptake and use of RRI** within European RPOs and RFOs had to be identified and evaluated. For this purpose, a multi-stakeholder consultation was set up and implemented, gathering detailed information from a broad range of stakeholders across Europe on the most significant RRI governance factors.

## 2.1 The Process of the Multi-Stakeholder Consultation

The stakeholder consultation on the ETHNA System concept was undertaken between January and October 2021 through a methodological triangulation approach of primary data sources including a **(1) questionnaire, (2) semi-structured interviews, (3) online workshops and a (4) global-scale online survey.**

(1) As a first step a short **questionnaire** was drawn up to be answered by the end of January 2021 by all future Living Lab implementing partners. The questionnaire was aimed for persons in mid- or high-level positions within the respective organisations dealing with RRI activities, concepts and approaches in their daily work, thus being able to give the best overview on the currently available and missing RRI tools, initiatives and aspects within the organisation. Implementing partners also formulated their intentions and expectations on how to deal with such missing RRI dimensions.

The questionnaire on the one hand focused on the **context and status/relevance of RRI implementation** and on the other hand on the **needs, challenges and opportunities** to stimulate internal reflection among the project partners. Thus, it furthered a better understanding of the interdependencies present among the implementers, for instance between organisation types, area(s) of research, organisational structure, and the use and adoption of different RRI keys. This indirectly contributed to developing a future self-assessment method and helped outline the topics to focus on in the interviews and workshops.

(2) Afterwards 25 semi-structured **exploratory interviews** were conducted by ETHNA partners between April and June 2021. The target group of the interviews consisted of **persons in mid- or high-level positions within RPOs and RFOs** actively engaged in RRI governance.

The interview candidates did not necessarily have to be RRI experts themselves but it was foreseen that they were familiar with key concepts and areas of RRI, as well as have an overview of the current governance of RRI and/or the selected key areas within their own organisations. In addition, such people were looked for who could provide insights concerning the institutional adoption of RRI principles and key areas within their discipline (research area) or sector, region or country.

Each project partner was asked to identify such potential interviewees to provide ZSI with a broader pool of suitable persons across Europe from which the final interviewees were selected. This stakeholder mapping proved beneficial because it allowed for the selection of a group of interviewees which represented a balanced distribution of countries, RRI keys and relevant organisation types.

The **25 interviewees** came from ten countries across various subregions of Europe (Northern, Western, Central and Eastern Europe, Southern Europe – based on EuroVoc classification)[1], and while all interviewees had experience with RRI governance, some of them had specific expertise in RRI keys: six in ethics and/or research integrity, four in open access or science, three in gender equality and two in public engagement.

Since the Living Lab approach which was used to test the usability of the ETHNA System concept had been built on the **quadruple helix model** aimed to foster interactions of four stakeholder groups within the knowledge economy, namely academia, business, policy-makers and civil society (D5.3: Evans et al. 2017; Häberlein et al. 2021a; Popa et al. 2018), the consortium also strived to conduct interviews with persons working in research (or innovation) performing businesses and civil society organisations. Altogether seven RFOs and 18 RPOs were interviewed, and the latter group included five businesses and two civil society organisations.[2]

The interviews followed a semi-structured format where a predefined set of questions slightly varied according to the organisation types interviewed.

The interviews focused on the following main question groups:

- personal and/or institutional approach to the topic, i.e. expertise and understanding of RRI;
- organisational priorities and drivers of RRI institutionalisation;
- missing RRI practices & barriers of institutionalisation;
- good-practice examples; and
- optional remarks on ETHNA System concept ideas.

(3) Based on the responses of the interviews, a **series of online workshops** was organised which were dedicated to delve further into the drivers and barriers concerning RRI governance in general and individual RRI keys in the concrete. The **five workshops** were held between July and September 2021 with the participation of internal (Living Lab implementers) and external stakeholders (ranging from 11 to 17 participants) with the aim of discussing and analysing factors that drive or hinder the uptake or use of RRI keys in RPOs or RFOs.[3]

The participant group consisted of representatives of Living Lab implementers and national or international RPOs or RFOs (based on the workshop organiser) who are knowledgeable in **RRI governance and the RRI key** at hand. It was decided that since governance is a horizontal key area spanning all of RRI and all workshops, the participants should either be a decision-maker within their organisations or have an in-depth understanding of how the organisational governance should be designed.

[1] Austria, Bulgaria, Denmark, Estonia, Hungary, Norway, Portugal, Serbia, Slovakia, Spain

[2] Due to the lack of contacts among partners, the civil society sector is underrepresented but still brought in to provide valuable insights in some particular aspects, such as gender mainstreaming or citizen science.

[3] Specifically, ZSI held a workshop with relevant RPO representatives in the topics of RRI governance and public engagement on 6 July 2021, ARC Fund in the topics of RRI governance and ethics on 7 July 2021, FECYT in the topics of RRI governance and gender equality on 8 July 2021, NTNU in the topics of RRI governance and open access/science on 26 August 2021, while Harno focused on RRI governance in RFOs on 23 September 2021

The workshops aimed to obtain relevant observations and develop recommendations for the forthcoming Living Labs and thus focused with some variation on the following broad issues:

- the relevant drivers and incentives in terms of RRI governance and a pre-selected RRI key in RPOs or RFOs;
- the barriers in the way of making RRI and a specific RRI key a common practice in RPOs or RFOs; and
- RRI initiatives in the organisational strategies and practices.

By systematically collecting and analysing these drivers and barriers in specific organisational and country contexts, with the support of the invited external expert stakeholders, more specific observations could be obtained. This resulted in the ranking of drivers and barriers to RRI institutionalisation per RRI keys and organisational types that was validated in the last phase of the multi-stakeholder consultation.

(4) The validation of the findings gained through the interviews and the workshops was undertaken by an **online global survey** in October 2021. By using the **Web of Science database**, a survey was sent out by ZSI to a broad group (10,000+) of potentially relevant expert stakeholders to assess the **relevance of drivers, barriers, good practices and potential progress measures** deemed most significant in the previous consultation phases.

Altogether **888 responses** were received in the survey from 69 countries across the world, with a balanced gender representation of 449 female and 426 male respondents. The survey managed to involve the opinion of more senior experts since more than 55% of the respondents had more than 15 years of experience (half of them more than 25 years), while 35% had more than five years of experience and only around 10% could be considered new to the RRI topics (less than five years of experience). The biggest limitation stemming from the survey dissemination strategy was the overabundance of replies coming from ‘traditional’ RPOs (overwhelmingly higher education institutions) which consisted of around 80% of the responses. Since only one Living Lab implementation specifically focused on RFOs (while five on different settings in RPOs) this uneven distribution was deemed acceptable for analytical purposes.

As regards the specific survey content, after providing their general demographic and organisational characteristics (non-mandatory questions concerning the country of residence, type of organisation of affiliation, years of experience, age group), the survey asked the respondents about their familiarity with the overall concept of RRI and RRI governance in general, as well as with the specific RRI keys.

The main part of the survey included the same set of **questions per RRI key** on the perceived (subjective) relevance of the **incentives, the barriers, the good practices and the progress measures for monitoring RRI institutionalisation.** The relevance was to be rated on a Likert scale of 1-10. At the end of the survey there was a possibility to add free short comments on the ratings.

The concrete incentives, barriers, good practices and progress measures to be rated in the survey were the ones that have come up most frequently in the discussions conducted in interview and workshop formats in the previous two phases. In this sense the survey validated the findings gained in a smaller, unavoidably biased sample on a global scale with the support of RRI experts. It also complemented our data with information potentially useful for the Living Lab implementation.

## 2.2 The Outcomes of the Multi-Stakeholder Consultation

At the end of the multi-stakeholder consultation process the main findings were summarised in a separate document aimed at providing valuable input to the finalisation of the ETHNA System concept. The following summary of outcomes should be understood as a potential assortment of RRI governance factors that can be valid for the different settings of RFOs and RPOs. The later project stages (evaluation of the Living Labs) helped us to understand on which factors to focus on in different types of organisations.

### 2.2.1 Main incentives and success factors

We found the following main incentives to be crucial for a successful implementation of the ETHNA System. These incentives could be understood as general recommendations on what to focus when planning and designing the implementation of a Living Lab:

- **Top-down support** (from the institutional leadership level) is key (without it no initiation and/or scaling up of processes is possible);
- The **commitment of individual researchers** to create added value beyond their immediate field of research is required to make RRI practices more widespread;
- The ideal situation is to ensure a **mix of bottom-up and top-down approaches** to gradually incorporate ethics (and other RRI keys) in research practices (see the above two points);
- The implementation of the ETHNA System could be faster if already existing **organisational values** (identity) **support the uptake of RRI issues;**
- A **supporting organisational culture** (see above point) may also result in an organisational mandate and regulatory framework that facilitates the consideration of RRI principles in research activities;
- A supporting organisational culture and related mandates could be fostered through **participatory actions** establishing open spaces for discussions within the organisation (in particular focusing on networking across various disciplines) and beyond the organisation (bringing in external views along the quadruple helix, e.g. from RFOs or businesses);
- In order to be aligned with the values of the best RPOs in their fields, **voluntary compliance with national or EU standards and normative rules** should be aimed at in various RRI keys (in particular ethics, gender mainstreaming) – this is linked with a potential fear of missing out on the national and international trend (e.g. in open access);
- The **requirements posed by external bodies** should not be underestimated. In case of certain RRI keys (in particular gender mainstreaming and open access) the expectations of RFOs are strong incentives for taking up RRI principles and practices (in case voluntary adherence to state-of-the-art standard is not pursued, this incentive may replace it);
- In the above case, the organisation may consider to establish stronger links – preferably in cooperation with other RPOs – to **lobby for organisational self-interests**, e.g. grant requirements concerning RRI (such as open access or gender mainstreaming) should be coupled with adequate funding provided for RPOs;

- The implementation of the ETHNA System should strive not to put (yet) another burden on researchers – **incentive systems should acknowledge the research efforts** taken in different RRI keys, such as public engagement or open access through various measures, such as new 'RRI conform' performance or evaluation metrics, awards;

- **Education of the stakeholders** that may ensure more responsible research is crucial, in particular with regard to the young generation (e.g. building RRI issues into curricula);

- **Practical training of researchers** and management (on a continuous basis) is essential to change institutional identity and mandate towards more responsible (ethical) research practices;

- The "creation" of **organisational facilitators** (persons or units) is key for the uptake of RRI issues – this can be solved through, e.g. dedicated pilot projects, role models or mentors already engaged in certain RRI keys and willing to share their knowledge and skills;

- The existing and new knowledge concerning different RRI keys should be compiled and disseminated in **practical guides** – in many cases, knowledge is already available within institutions but in a fragmented and non-transparent way.

### 2.2.2 Main barriers and challenges to overcome

We found the following main (partly interrelated) barriers in front of a successful institutionalisation of the ETHNA System:

- **Lack of resources** (human/financial/time/etc.) to deal with RRI issues in addition to the 'usual' daily work;

- **Lack of awareness about the RRI key** (in particular mentioned for ethics and gender mainstreaming);

- **Lack of understanding** of the various concepts **of a particular RRI key** (in particular mentioned for open access and science);

- **Lack of support from the leadership** to launch or implement RRI keys;

- **Lack of institutional support structures** and practices for certain RRI keys;

- **Lack of institutional values,** standards or visions relating to RRI keys;

- **Lack of practical actions** to implement high-level policies or strategies (i.e. goals are not being translated into practices);

- **Lack of skills** to engage with societal stakeholders (mentioned for **public engagement);**

- **Lack of motivation** from the side of researchers, i.e. they regard the RRI-related as a burden with no added value (mentioned for ethics and public engagement);

- **Fear of researchers to be engaged in RRI practices** (mentioned in particular for **open access** where fear of misuse, worries about quality of OA journals, data privacy or security issues are prevalent).

### 2.2.3 Action points to overcome barriers

Based on the suggestions of the stakeholder consultation, we compiled the following list of specific actions that can potentially facilitate institutional change necessary to implement an effective RRI governance.

- Alignment with and **voluntary adherence to external standards** in various RRI keys (ethics, gender mainstreaming, open access, etc.);
- **Checking of the requirements of RFOs** regarding RRI issues (e.g. ethics data management plan, gender equality plan, open access strategy, public engagement strategy) to make use of RFO funding. The lessons learnt could be compiled in a document to enable the successful submission of grant proposals to various RFOs;
- **Simplification of RRI language** (jargon) to foster the understanding of benefits of certain RRI issues, such as ethics or public engagement. This action can involve the preparation of different types of documents, such as presentations or guidelines;
- The **use of internal databases** to check what RRI-related documents are already available within the institution (that may not be thought of as RRI-related). The collected knowledge could be compiled in one document, e.g. an RRI strategy or a practical guide;
- The use of a **work environment survey** to gather readily available data on the knowledge of available RRI-related principles and measures;
- Development of an **evaluation system of research projects** adhering to various RRI keys (such as ethics, gender mainstreaming, open access) – this may ensure that those research projects are funded within an organisation that takes into account relevant RRI aspects;
- Make ethics and other RRI keys (such as public engagement, open access publications, membership in ethics committees) part of the **individual performance evaluation** of researchers – in this way the bottom-up motivation of researchers to engage in RRI is strengthened;
- Make research ethics (incl. research integrity) or other relevant RRI keys (e.g. open access, public engagement) **part of the curriculum** offered by an RPO (as early as Bachelor level);
- Make **investigations of scientific misconduct** more transparent by e.g. adopting a clear and unambiguous process guideline on how to deal with bad practices;
- Establishment of **reflection spaces** in various formats (public debates, dialogues on selected topics) on how to build ethics (standards, principles) and other RRI principles into daily activities;
- Establishment of **internal links (networking)** with departments (disciplines) to facilitate the identification of common problems and solutions in RRI issues. This may be carried out in more formal or informal settings;
- Establishment of **links** (network) **with other (external) RPOs** to facilitate the identification of common problems and solutions in RRI issues. This may be carried out in more formal or informal settings;
- Checking of **'catalysts'** of other organisations, i.e. factors contributing to the initial uptake of RRI-related issues in organisational documents and/or processes and/or having a 'multiplier' effect once the given RRI issue has already been (partly) institutionalised. These factors may vary from responsible persons to more 'abstract' supporting structures and practices in the environment (best-case adaptation).

### 2.2.4 Categorisation of the RRI governance factors

In order to make the analysis of the RRI governance factors stemming from the multi-stakeholder consultation more structured for the purposes of evaluating the practical findings of the Living Labs, we decided to use the **theoretical framework** developed in the RRI-Practice Horizon 2020 project (Wittrock et al, 2020).

This framework was already utilised at the workshop phase when relevant drivers for RRI, barriers to RRI and potential organisational actions were divided into **structural, cultural and interchange-related factors**. All three factors focus on different aspects within organisations (RPOs and RFOs) that might contribute to or hinder RRI governance.

First, **structural aspects** focus on the regulative and normative aspects that structure and standardise organisational behaviour. Such aspects include formalised roles and positions, mandates, responsibilities, decision-making structures in the organisation, and the related formal and informal documents, such as concepts, norms, standards, procedures and strategies, etc.

Second, **cultural aspects** deal with the informal and tacit organisational structures influencing RRI uptake. Such structures might explain the difference and the interconnected relation between policy goals and practical behaviour within organisations. Such aspects include organisational cultures, values and identities, e.g. in our case perceptions about RRI.

Third, the **interchange-related aspects** are based on the observation that organisations are not only influenced by their structure and culture but also by their interactions with other organisations in their broader environment. Thus, these aspects focus on drivers or barriers stemming out of but connected to the organisation, such as impacts of the broader policy landscape or research culture (Wittrock et al., 2020).

Since RRI governance was treated as a **horizontal aspect** during the stakeholder consultation and the proposed ETHNA System to be tested in the Living Labs also focuses on the RRI governance structure in the strict sense therefore **Table 1** summarises the aspects deemed the most relevant by stakeholders in terms of adoption or successful use of RRI in organisations. A more detailed analysis at the level of specific RRI keys is out of scope of this article.

**Table 1. Structural, cultural and interchange aspects of RRI governance**

| | STRUCTURAL ASPECTS | CULTURAL ASPECTS | INTERCHANGE ASPECTS |
|---|---|---|---|
| **POTENTIAL DRIVERS FOR RRI** | Organisational mandates, regulations, strategies<br>Management keen on furthering RRI<br>Support structures and practices, incl. dedicated pilot programmes | Organisational values and identity<br>Organisational 'facilitators' | Requirements or expectations from funding bodies<br>Adherence to national or EU standards or normative laws |
| **POTENTIAL BARRIERS TO RRI** | Lack of resources (human, financial, time, etc.)<br>Lack of institutional support structures and practices<br>Lack of support from management | Lack of awareness<br>Lack of understanding<br>Lack of motivation<br>Lack of institutional values, standards and visions | Lack of or confusing policies, strategies or mandates |
| **POTENTIAL ORGANISATIONAL MEASURES (GOOD PRACTICES)** | Knowledge pooling within the organisation<br>Performance metrics<br>Trainings and education<br>Awards | Reflection spaces<br>Engagement with external stakeholders<br>Practical guides | Alignment with external standards and funding requirements |

Source: authors' categorisation based on the methodological framework by Wittrock et al., 2020

# 3 The Living Labs

In order to test the practical applicability of the finalised ETHNA System concept in different RPOs and RFOs, it was experimentally implemented in Living Labs in six institutions from five countries. The six organisations were the following: University Jaume I (UJI), a large public university from Spain; the Norwegian University of Science and Technology (NTNU), the largest public university in the country; the Education and Youth Board (Harno), a funding agency from Estonia; the Science, Technology and Business Park (ESPAITEC), a Spanish technology park; the Institute for the Development of New Technologies (UNINOVA), a multidisciplinary, independent, and non-profit research institute from Portugal, and Applied Research and Communications Fund (ARC Fund), a non-profit research and innovation policy institute from Bulgaria.

The implementation process followed the **Living Lab methodology**, and was divided into **six stages** (planning; construction; consultation; refinement; testing; review) lasting approximately one year (November 2021 – October 2022), with some institutions ultimately experiencing delays in certain process stages. [4]

## 3.1 Evaluation Process of Living Lab Activities

The evaluation of the Living Labs has already started before the actual finalisation of the process, which means that it is not yet feasible to assess the scope of the institutional changes induced by the implementation process as the actual impact will only become tangible in a longer timeframe. However, it is already possible to draw conclusions at a more practical level. Therefore, the evaluation process focused on the most common drivers and barriers of implementation, highlighting concrete actions and good practices emerging from the process, as well as outlining necessary conditions for supporting the organisational uptake of RRI in the six implementing organisations.

The evaluation took place between September and November 2022 and contained the following steps:

(1) DBT organised **two rounds of two online, 3-hour participatory evaluation workshops** in September and October 2022. The first round of workshops was held with representatives of the project partners participating in Living Labs, while the second round of workshops was involving internal and external stakeholders supporting the Living Lab implementation.

The workshops were organised as semi-structured events focused on the **added value of RRI** in general, as well as the particular experiences encountered in the actual implementation process. The workshops employed a diversity of exchange formats to support mutual learning and feedback gathering as needed. This structure provided the participants with great flexibility to engage in dialogue and generate collective reflections on the insights and lessons learned from the implementation process.

The purpose of the workshops was to create a **common space for the Living Lab stakeholders** to critically reflect on their experiences with the implementation and directly share the matter-of-fact assessment of their hands-on experiences. As an end result, the workshops

[4] The concrete steps are out of scope of this report but can be found in Vedel Neuhaus, Sigrid et al (2022). *D5.3: ETHNA System Implementation Co-design Requirements Guiding Paper – The ETHNA Lab*. https://ethnasystem.eu/wp-content/uploads/2022/05/D5.3_ETHNA_lab-method-guide.pdf

contributed to the elaboration of more specific evaluation questions about the methodology and process of the implementation.[5]

(2) The in-depth evaluation questions were asked from the so-called **Lab Managers**, the key people responsible for the planning, coordination and facilitation of the Living Lab implementation process. Their responsibility ranged from implementing and monitoring all stages of the process through recruiting, engaging and supporting all relevant internal and external stakeholders to communicating and reporting to the organisational and project management.

Late October and early November 2022 the Lab Managers answered the questions in the form of an **online self-evaluation questionnaire** developed by ARC Fund. They had to give short but concise answer to a variety of questions introducing their organisation, explaining the reasons for their commitment to adopt institutional changes, and going into detail about the actual measures undertaken, also highlighting the participating internal and external stakeholders, as well as the barriers, drivers, good practices and potential sustainability of the induced changes.

(3) Building on the responses of the Lab Managers, a **2-day workshop dedicated for knowledge and experience transfer** was organised by ARC Fund at the end of November 2022. On the first day the lessons and experiences of the six implementation cases were discussed in detail with the involvement of external experts, and on the second day a final evaluative workshop was organised under the guidance of ZSI on the emerging challenges and potential sustainable outcomes of the Living Labs.

This workshop was the first opportunity to bring together, in one physical location, all Living Lab implementers to discuss and rank the barriers to the implementation of the elaborated RRI governance system within organisations and the measures to react to them.

The work was done in **break-out sessions** with facilitators where one group included the Lab Managers, while two other break-out sessions involved the other internal and external Living Lab stakeholders to discuss the key enabling external factors (drivers) and the actions and strategies that could exercise an either positive or negative impact for RRI governance. After the end of the parallel break-out sessions the group work was discussed in a plenary setting involving all participants to draw conclusions and make recommendations.

[5] More information on the format and results of the participatory evaluative workshops is available here: Alves, Elsa (2022). D5.4 Report on the ETHNA System Implementation Analysis & Alves, Elsa (2022). D5.5 Report on the difficulties found in the implementation processes. https://ethnasystem.eu/wp-content/uploads/2023/01/5.5-Report-collecting-the-difficulties-found-in-the-implementation-processes-final_181222.pdf

## 3.2 Evaluation Results of the Living Labs & Links to other Deliverables

At the end of the evaluation process of the Living Labs in November 2022 a diverse set of results from each implementer was available for further analysis. **The "Report on the difficulties found in the implementation processes" (D5.5)** collected the key barriers and hindrances encountered by each Living Lab implementing partner, as detailed in separate participatory workshops. This report serves as the underlying basis for the subsequent analyses undertaken in WP6 (D6.1) and WP4 (4.3).

The report on the implementation difficulties therefore did not draw out final conclusions about the viability of the ETHNA System or its implementation – this long-term perspective on sustainability is included in the present blueprint. Its main aim rather was to gather and structure evaluative statements by the partners and the involved stakeholders in order to submit these to the evaluative activities needed for drafting the evaluation report about the ETHNA System implementation (D6.1) and this blueprint (D4.3).

The findings of the evaluation were first comprehensively summarised in an evaluation report prepared by ARC Fund: **"Evaluation report about the implementation of the ETHNA System" (D6.1).** This report presented the most important challenges and barriers, as well as the potential measures to overcome such barriers in a structured way; in addition, it provided a summary on the lessons learned from the Living Lab process with an outlook to the necessary requirements and conditions needed to be fulfilled to implement the ETHNA System.

The main difference between this blueprint and the evaluation report (D6.1) is that while the findings of the latter document are built upon the conclusions of the Living Lab process, this blueprint aims to delve deeper into the results not only from the Living Lab process but also from the multi-stakeholder consultation.

This **blueprint aims to provide a more structured analysis** on how to draw up an implementation plan for an effective RRI governance system, with an explicit future view on sustainability and durability. Such a system will take into account different institutional settings. For this purpose, we use the three categories of RRI governance factors (structural, cultural and interchange-related) defined in Section 2.2.4, complemented with an additional analytical layer of organisational categorisation, meaning that the six implementers were divided into three categories on the basis of two of their key characteristics in terms of RRI governance ("leadership" and "base") built on results from the multi-stakeholder consultation.

This **level of analysis aligned around the three categories of RRI governance factors** is not present in the "**Evaluation report about the implementation of the ETHNA System" (D6.1)** but the document contains valuable information on the barriers, drivers and good practices encountered by each Living Lab implementing partner, categorized into the three quadrants on RRI institutionalisation. Interested readers are advised to also check this report to have a broader view on how the perceived incentives and bottlenecks of the implementation process, as well as the conclusions drawn might differ in the two different project stages, i.e. after the Living Lab implementation (D6.1) and at the end of the project when all results stemming from the Living Labs and the multi-stakeholder consultation process have been analysed (D4.3).

If a reader is interested in more detail on the format and evaluative statements of the participatory evaluative workshops serving as the main foundation of D6.1, we advise to consult the **"Report on the difficulties found in the implementation processes" (D5.5)** too.

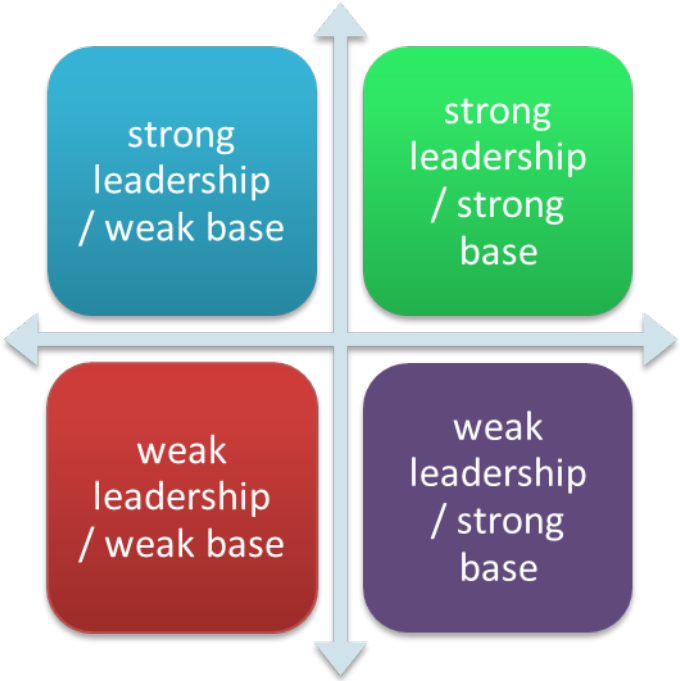
### 3.2.1. Necessary conditions required to support and implement the ETHNA System

We found that **certain necessary conditions** have to be fulfilled at organisational level if an RRI governance system is to be successfully implemented. Notwithstanding the fact that there are other relevant institutional factors influencing the chances of a successful adoption and use of RRI by RPOs and RFOs – such as among others size, country, research area, funding sources – **two dimensions can be considered as essential** for institutional change to bring an effective RRI governance to life: **the leadership and the base**.

First, the **leadership represents the commitment of the higher or mid-level management** in terms of top-down support received by organisational stakeholders for adopting or using RRI keys. The leadership might provide such top-down support in various ways ranging from a passive commitment to a more active involvement, such as the heightened awareness level of certain RRI-related issues, the prevalence of a clear vision on RRI, the willingness to adapt conditions or allocate the required – human or financial – resources for a better RRI governance process.

Second, the **base means the strength of the organisational structures in the support of the uptake or use of RRI keys** that are launched and managed at various (lower) levels of the organisation. As opposed to the leadership dimension, these support measures are mostly started from bottom-up, enabled by the values, awareness, skills and knowledge of the research staff and other organisational stakeholders.

**Figure 1. RRI Institutionalisation Quadrants**




Source: ZSI's own rendition, taken from D4.2

A **strong leadership but weak base (top left quadrant)** means that initiatives concerning an effective RRI governance may already be under way but, generally, have not borne fruit yet, i. e. RRI norms and practices have not been broadly adopted by the base yet. However, the leadership is strong in terms of

providing guidance on designing and implementing relevant activities. This guidance could be reflected in an increased awareness, sense of urgency, willingness, clarity of vision, leadership skills, resources, etc.

A **strong base but weak leadership (bottom right quadrant)** means that RRI initiatives can already be found in the organisation however the leadership is weak in terms of implementing and managing an RRI governance system. This weakness might entail that the management might not have heard about such initiatives, might not care, or might think that these initiatives are too specific or small to be transferred, scaled up, or adopted by all organisational units. In theory, the organisational focus should first lie on spreading RRI norms and practices locally, on building showcases, and on connecting to similar efforts – both internal and external ones – to build a critical mass and reach and engage the leadership.

A **strong leadership and strong base (top right quadrant)** mean that both leadership and base are aligned in terms of needs and efforts towards building an RRI governance system. Such organisations show advanced levels of RRI awareness and management, and might have a long tradition of reflecting and adjusting their research practices, of reacting to external normative efforts (e.g. the adoption of standards), and of building institutional support structures and mechanisms. The guidance in this case will focus on giving impulses with the aim of further refining the efforts made to implement the ETHNA System and adopt an anticipatory perspective in terms of future developments.

The devised RRI governance system was designed to work for all quadrants, **with the exception of the lower left quadrant,** i.e. weak leadership in combination with a weak base. The prerequisite of the ETHNA System is that at least one dimension needs to be somewhat strong, otherwise there is nothing to build on.

### 3.2.2. Categorisation of Living Lab implementers

The six implementers were asked to **self-assess** themselves after the Living Lab implementation process. **Two implementers considered themselves to have both a strong leadership and a strong base**: **Harno and UJI.** UJI was the higher education organisation where the Senior Management Team was deeply committed to the RRI governance process, and leadership was underlined by the explicit support of the Research Vice-rector.

Regarding the base, **UJI** has already had a number of relevant documents in place before the Living Lab process, such as Ethics Code, Code of Good Practices and University Governance, the PhD School's Code of Good Practices, Social Responsibility Report. Ethics-related units and different positions related to ethics management, such as open access, gender equality, conflict resolution and research integrity, have also been a long-established practice. Such units include the Deontological Commission (body in charge of evaluating and reporting on research projects and academic research work, PhD theses and master's thesis concerning procedures involving human patients) and Ethics and Social Responsibility University Commission (CERSU; body assessing, evaluating, monitoring and controlling the University Social Responsibility system and promoting ethics). It is worth noting that participation in both Commissions is voluntary and non-remunerated. UJI also has its Ethics Line – a communication channel through which the academic community can report any infringements of the Ethics Code.

**Harno** as the only RFO also possesses a strong base and strong leadership: All three general directors and the entire management actively supported the Living Lab implementation process. It was agreed that as a government institution, Harno's employees will follow the most important values stipulated in the Code of Ethics of the Ministry of Education and Science (Harno operates under its jurisdiction): legality, people-centeredness, reliability, expertise, impartiality, openness and cooperation. As far as the existing structures are concerned, Harno has its general rules of conduct, rules for preventing corruption, the position of data protection specialist and considerable experience with public engagement (taking decisions with and considering those who are affected by these decisions).

**UNINOVA placed itself into a strong leadership / weak base category**. This decision seems to be based on the fact that the organisation is deeply committed to respecting and promoting good research practices, nevertheless lacks a formalised model and wider adoption. Not having its own legislative base, UNINOVA adheres to external requirements and principles, such as commitments towards the Portuguese research funding agency.

**RRI-related documents are widely disseminated** among researchers and PhD students within UNINOVA's Centre of Technology and Systems (CTS) where the ETHNA System was implemented. CTS has already had a very good awareness regarding RRI in all of its key areas due to its mission to promote excellent research and innovation practices in Portugal. There are ongoing initiatives regarding research ethics and integrity, such as support of good research practices or RRI awareness among PhD students. These resources were essential for determining the CTS position regarding RRI and for taking a decision to implement level 2 of the ETHNA System (the Code of Ethics and Good Practices in R&I, the Ethics Committee on R&I, and a small informal ad hoc committee to play the role of the RRI Officer).

**Espaitec was re-classified into the strong leadership / weak base category** on the basis of the characteristics of the Science and Technology Park in terms of RRI governance. Even though there was a basic knowledge of the existence of RRI and all activities of the Science and Technology Park was developed under a strategy aligned to the basics of RRI, this was however never pointed out or featured,

and the different elements were not considered as a pack of norms or rules to follow. The leadership took initiative and brought in external expertise to support the successful implementation of the ETHNA System.

**The other implementers were classified in some sense to the weak leadership / strong base category. NTNU** is the most interesting case since it is a large public university with an undoubtedly strong base (Code of Ethics for employees at NTNU, Guidelines for Policy on Open Science, Policy for Gender Equality and Diversity, Research Ethics Committee, Ethics Portal). Moreover, the Philosophy department where ETHNA System was implemented has a Programme for Applied Ethics and manages the University's Ethics Portal.

The RRI leadership at NTNU can equally be regarded as strong however a strong support for the ETHNA System was nevertheless missing hence our categorisation. The existence of so many initiatives at university level made the necessity of a new RRI governance system doubtful with divided opinions among researchers and managers at NTNU. The leadership was similarly ambivalent, worrying about staff not endorsing it, about duplication of existing initiatives, and about the appropriateness of the departmental level for the ETHNA System. On the other hand, some saw this as an opportunity to address important issues and improve things.

A bit similarly – but at a much smaller scale – **ARC Fund** has also had a strong base before the Living Lab implementation: certain RRI keys, such as public engagement, open access, ethics and gender equality have been ingrained into ARC Fund's practices and objectives from the earliest years of its activity. Several internal organisational documents deal with some RRI aspects, including among others the Statute of ARC Fund, Code of Ethics, Code of Conduct, Rules and Order for Performing Publicly Beneficial Activities. ARC Fund has several bodies that can provide support for RRI uptake, e.g. its Data Protection Officer, Public Council on Safer Internet Use and Innovation Council.

However, due to its small size, ARC Fund has no specific department, team or position dedicated to any of the RRI keys, nor the RRI framework as such. The ETHNA System project provided an excellent opportunity for implementing a comprehensive ethics governance structure for conducting socially responsible and relevant research. Unfortunately, the progress has been much slower as expected due to certain reservations from the top management. While approving the process on the declarative level, the management's practical support for the implementation was negligible.

### 3.2.3. Barriers, drivers and good practices per implementer category

Using the categorisation of the **RRI governance factors (structural, cultural and interchange-related)** from Section 2.2.4 and the grouping of the six implementers (per RRI institutionalisation quadrants) from Section 3.2.2 we can summarise the most typical or common barriers, drivers and good practices in a table form with descriptive information.

#### (1) Strong leadership / strong base

**Table 2. Structural, cultural and interchange aspects for strong leadership / strong base**

| | STRUCTURAL ASPECTS | CULTURAL ASPECTS | INTERCHANGE ASPECTS |
|---|---|---|---|
| **POTENTIAL DRIVERS FOR RRI** | Strong institutional support<br>General awareness on the relevance of and experience with RRI<br>Specific resources (grant, human) to support implementation | Organisational values aligned with RRI<br>Existing units and positions acting as organisational 'facilitators' | Commitment to external accreditation (strengthening frontrunner position on RRI)<br>Support from external stakeholders |
| **POTENTIAL BARRIERS TO RRI** | Time constraints<br>Other priorities of employees (heavy workload) | Lack of awareness among some researchers<br>Lack of understanding due to the diverse topics related to RRI<br>Balancing the need of the organisation and ETHNA project | N/A |
| **POTENTIAL ORGANISATIONAL MEASURES (GOOD PRACTICES)** | Participatory process with the involvement of many actors<br>Awareness-raising and dissemination activities | Open debate space<br>Engagement with external stakeholders<br>Code of Good practices with a glossary | Alignment with external standards and funding requirements |

Source: authors' categorisation based on the methodological framework by Wittrock et al., 2020

**In the 'ideal' scenario** when there is both a supportive management and already established support structures and practices concerning RRI governance, **many barriers have already been removed**, mitigated or retained. Most importantly, the dedication of the management means a favourable position in getting the necessary extra funding and experts needed for RRI governance. Managerial support and the previous good experience gained with RRI practices also increase the chances of a successful cooperation of internal and external stakeholders across several disciplines.

While **structural barriers have predominantly lost their relevance** in this case with the key exception of time constraints partly stemming from the strict deadlines imposed by the ETHNA project itself, **cultural and interchange-related barriers might still need to be overcome**. The theoretical support expressed by stakeholders should be turned into an active commitment with concrete contributions. This reluctance might stem from a lack of knowledge and understanding of the complex RRI concept sometimes perceived as mandated by external parties. In case of Harno, a further hindrance was that the heavy workload prevented theoretically active colleagues from participating in implementation steps.

In case of UJI a balance between the needs of UJI and the ETHNA project had to be found at certain points of the implementation process. A similar issue has arisen by Harno where a fear of additional red tape necessitated specific modifications in the ETHNA System.

**Cultural drivers might help counteract such attitudes**, aiming to embed RRI into organisational (soft) values and identity. A participatory and collaborative process was used to set up a truly open debate space to discuss how to achieve this goal. Such a process could benefit from a neutral organisational facilitator and definitely should involve external stakeholders.

In the concrete Living Lab implementation cases such a process consisted of an **initial consultation and interviews** about the knowledge of various RRI keys, internal working groups meetings, bilateral meetings and workshops with external stakeholders, also seeking synergies with broader initiatives of interests within the organisation.

The successful implementation of such open participatory processes is in itself a success but the Living Labs managed to **adopt new codes of ethics and good practices** in this short timeframe. Particularly important was the addition of a glossary of complex RRI concepts into the code drafted by UJI, which proved to be very useful for the interested research community. Such novel outcomes contribute to the dedicated objective of these Living Lab implementers to strengthen their frontrunner position in RRI and be recognised for their level of quality (a cultural driver).

### (2) Strong leadership / Weak base

**Table 3. Structural, cultural and interchange aspects for strong leadership / weak base**

| | STRUCTURAL ASPECTS | CULTURAL ASPECTS | INTERCHANGE ASPECTS |
|---|---|---|---|
| **POTENTIAL DRIVERS FOR RRI** | Management keen on furthering RRI<br>Researchers being employed at or members of other RPOs or RFOs | Organisational 'facilitators' | Compliance with contractual obligations |
| **POTENTIAL BARRIERS TO RRI** | Lack of time<br>Lack of human resources<br>Lack of funding<br>Difficult identification of RRI keys to focus on<br>Lack of institutional support structures and practices | Fragmented knowledge on RRI<br>Lack of understanding of the benefits on RRI<br>Lack of motivation | Diverse need of various actors in the ecosystem of implementers<br>Difficulties with engaging or getting feedback from various actors in the ecosystem of the implementers |
| **POTENTIAL ORGANISATIONAL MEASURES (GOOD PRACTICES)** | Knowledge pooling within the organisation<br>Dedicated website section on RRI<br>Training sessions on RRI | Intra-organisational consultation<br>Engagement with external stakeholders<br>Adaptation of RRI jargon to institutional reality | Strong connection to external obligations |

Source: authors' categorisation based on the methodological framework by Wittrock et al., 2020

Living Labs with a committed (higher-level) management but a weak base had to use their limited amount of implementation time to identify the best ways to **'spark' institutional changes** through some key RRI governance aspects. The dedicated managers aimed to focus on **complementary RRI aspects** perceived as the most important or the most feasible for RRI governance, and strived to promote excellent research and innovation practices to 'change the organisational culture'. Further motivation was also provided by interchange-related drivers, e.g. to comply with the contractual obligations towards the national research funding agency in terms of RRI.

Similar to Living Labs with a strong base and leadership, the scarce time available for researchers to spend on RRI issues proved a major barrier. The specific situation of implementers – with both having a federated ecosystem of researchers or research-performing organisations – also proved challenging in terms of stakeholder involvement and engagement. This was exacerbated by the lack of people available, lack of funding (beyond the project grant) and the lack of other support structures for RRI governance.

To increase the awareness, understanding and motivation of researchers towards RRI, **organisational 'facilitators'** (a small but dedicated RRI team or external experts) planned a participatory process with as few formalities as possible to consult, refine and adopt practical RRI documents that also adapted RRI jargon to institutional reality. An important aspect is that external stakeholders were involved in this process through working sessions to offer valuable ideas, feedback and networking opportunities for initiating institutional changes towards an effective RRI governance.

A **knowledge pooling exercise** was an important first step in both cases in order to identify the achievable goals and priorities by recognising the weaknesses to overcome, the already available RRI knowledge and skills, and the best methods to adopt elements of RRI governance in a sustainable way. This was later followed up by consultations where the modifications to the ETHNA System concept were discussed to provide for a more participatory approach. In the case of organisations within this category a change of 'culture' is required but this goes beyond the current scope of the ETHNA System concept.

The participatory process resulted in drafting key documents on various RRI aspects and in case of UNINOVA was complemented by actions with the aim to **change organisational culture,** such as a specific website section to raise awareness on RRI, or training sessions on RRI organised for young researchers and PhD students of the institute.

### (3) Weak leadership / Strong base

**Table 4. Structural, cultural and interchange aspects for weak leadership / strong base**

| | STRUCTURAL ASPECTS | CULTURAL ASPECTS | INTERCHANGE ASPECTS |
|---|---|---|---|
| **POTENTIAL DRIVERS FOR RRI** | Organisational mandates, strategies<br>Support structures and practices available | Certain aspects of RRI considered as part of organisational identity (ethics)<br>Motivation of researchers to deal with RRI-related aspects<br>Awareness and understanding of RRI-related aspects (stemming also from teaching and projects) | Requirements or expectations from funding bodies<br>Adherence to national or EU standards or normative laws |
| **POTENTIAL BARRIERS TO RRI** | Declarative or ambivalent support from management<br>Support structures fragmented among various units<br>Support practices not considered related to RRI<br>Lack of time<br>Lack of or fatigue of involved people | Lack of understanding of the importance and meaning of RRI as an 'umbrella' term<br>Lack of motivation | Difficulties with involving external stakeholders |
| **POTENTIAL ORGANISATIONAL MEASURES (GOOD PRACTICES)** | Knowledge pooling within the organisation<br>Participatory process with inter-disciplinary and inter-departmental involvement | Reflection spaces, e.g. one-to-one interviews, workshops and focus groups | Alignment with external standards and funding requirements |

Source: authors' categorisation based on the methodological framework by Wittrock et al., 2020

The implementation process progressed with the most difficulties in Living Labs where the existing base was strong but the **leadership support was ambivalent or remained declarative in nature.**

As we observe in both cases of ARC Fund and NTNU, there were **clear organisational mandates** to conduct research in an ethical way, for the public benefit and support structures were already in place in the form of various documents and (advisory) bodies (even though scattered around in different departments or not explicitly referring to RRI). The researchers in both organisations were also quite

well-versed in and motivated to deal with RRI or ethical issues, based on their disciplinary or project-related experience and professional interests. **External drivers** such as the requirement of funding programmes might have also played a facilitating role for RRI uptake.

Nevertheless, **key structural barriers** prevented these Living Labs from achieving tangible results in the relatively short implementation timeframe defined by the project. The usual culprit of lack of time and personnel available for the ETHNA System implementation was worsened by the indecisive support and engagement rendered by (higher-level) senior managers. Thus, even the planning of the concrete implementation goals and steps caused unwanted delays. This might be connected with the issue of size: NTNU is too big for a Living Lab and thus looked for a suitable department for implementation, while ARC Fund is too small and has very different foci around three thematic programmes (but in the end used RRI as a common frame).

The ambivalent support did not help convince the relevant stakeholders of the benefits of RRI: there was a general feeling among some researchers that this is an **externally mandated process** which aims to discuss again topics that have already been discussed and/or do not need solutions. The size of implementers played again a role here in different ways: the small team of ARC Fund researchers felt a sense of ‘fatigue’ towards the topics already encountered several times in many RRI-projects and NTNU has already possessed of similar RRI governance structures but at an organisational (not departmental) level.

In short, initial structural barriers **exacerbated cultural barriers** in turn. To remedy the situation a participatory process for RRI institutionalisation started but progressed slowly or were stuck in key moments. This process in both organisations successfully managed to assess the RRI-related situation, and identify important RRI aspects worthy of further discussion or endorsement but concrete supporting documents or bodies have not been adopted yet. The main tool used was different types of **internal reflection spaces**, such as semi-structured interviews, workshops and focus groups, however the engagement of external stakeholders was deemed problematic

# 4 Conclusions and Recommendations

The ETHNA System is an **adaptable ethics governance system** that was experimentally implemented throughout 2022 at six implementing organisations (Living Labs) in four different RRI contexts, namely higher education organisations, RFOs, innovation ecosystems and research centres. The six organisations could be divided into three categories of institutions on the basis of the available prerequisites needed to achieve a sustainable institutional change towards an efficient RRI governance.

Based on the experience of these diverse organisations which followed a Living Lab approach to implement and test the ETHA System, the following **conclusions and recommendations** can be made on how to design a plan to implement an effective RRI governance system and hence contribute to the institutionalisation of RRI, taking into account different institutional conditions:

**Approval and support of the leadership is crucial**

Strong leadership, i.e. the **active engagement and support of the higher-level management seems** to be the most significant driver without which sustainable and transferable institutional changes towards an efficient RRI governance system can be done only slowly, limited in scope, or not at all. This is a structural driver which was present by all successful implementers in the ETHNA project – before engaging in an implementation endeavour similar to the Living Labs of the ETHNA System, the persons or bodies responsible ought to secure the approval and support at the appropriate organisational management level.

**Long-term impact depends on the support structures**

The approval of the higher management ensures the top-down support for institutional changes towards RRI governance but existence of organisational support structures (‘base’) and adherent organisational mandates are also particularly important for a sustained success. It is true that the implementation may start as a top-down approach (even forced by external requirements e.g. from funding bodies), but its **long-term impact ultimately relies on the bottom-up approach** guaranteeing the motivation of all relevant stakeholders.

**Certain structural barriers will never disappear – you must deal with them**

**Co-creation is time- and resource-intensive**. While it may harbour huge potential benefits later on and especially in the end, at the outset of an implementation process it practically poses a barrier and should be treated as such – even the best-suited organisations have to deal with it. The two ETHNA System implementers with a strong base and strong leadership had to also take care of issues related to heavy workload of involved stakeholders or other types of time constraints. In order to plan for feasible results with the available resources, the planning of an RRI governance system should start with the understanding of the broader (country) and local (organisational) context, i.e. available funding, personnel, time, prevailing and missing RRI aspects, the perspective and needs of stakeholders, preferably done by organisational ‘facilitators’ (proactive and committed employees with experience in RRI). This will not make the barriers disappear but will **contribute to risk identification and mitigation**, as well as the **proper planning of the concrete goals and steps** of the co-creation process.

**Co-creation is a must but should be tailored to different organisational realities**

The co-creation process which lies at the heart of Living Labs is required to ensure management support and build out the **bottom-up support structures**. Co-creation can be in itself a challenge; e.g. regarding the involvement of external stakeholders, with which more implementers struggled – but without it an ambitious effort to set up and manage an RRI governance system cannot be initiated.

The core idea is that internal and external stakeholders from many disciplines or departments should participate in **enriching discussions in various reflection spaces** to identify the aspects to focus on or to improve the quality and relevance of the already achieved results. However, the objectives and the process itself should be always tailored to the actual needs and opportunities of different institutions. The ETHNA System methodology developed in the project was considered to provide good ideas and inspiration by the implementers but each organisation should develop its own path towards RRI-paved institutional change.

For instance, organisations with a weak base can first **focus on one RRI key needed to 'kickstart' longer-term institutional changes** towards a future full-fledged RRI governance system. The examples within the ETHNA project show that this could be a realistic aim within a short timeframe. Such organisations can also choose which forms of participatory activities to use: at the beginning there might be a lack of understanding of RRI or even resistance towards the proposed changes therefore smaller-scale actions, such as interviews or focus groups with engaged stakeholders should be organised. The successful organisation of such events might serve as a stepping stone to subsequent higher-calibre events and measures.

**Feasible goals can only be set by understanding your organisational context**

One of the main findings of the ETHNA System implementation process was that **organisations tend to aim higher than they should.** The internal assessment of the organisational context in terms of RRI governance does not only help in early risk identification and mitigation but also in setting feasible goals that can be achieved within the given timeframe with the available resources.

The experience with the Living Lab evaluation shows that even a **rudimentary understanding** of two key factors, namely the strength and scope of higher management support and the availability of support structures for RRI governance can be highly beneficial in setting feasible goals.

The results show that substantial RRI-related institutional changes in such a short time frame could only be achieved by larger RPOs and RFOs that have already had a strong leadership and base, while Implementers with no strong leadership but with a formidable base could only use this time for self-reflection and a better understanding of their situation. Implementers with no base but an engaged management could go one step further and look for complementarities, i.e. adopting RRI aspects perceived as the most important to the organisation, subsequently benefitting the use of other RRI keys.

**An incremental approach can lead to substantial changes**

While the **long-term goal** of the RRI governance system **should be the change of culture**, the impact of seemingly small-scale changes should not be underestimated. A shift in organisational culture might be achieved exactly by such actions, e.g. hands-on guides with an understandable terminology, awards given for considerable RRI-related achievements or practical training on various RRI aspects, changing the RRI-related attitudes and mindset of the next generations.

Such an **incremental approach is** not only **beneficia**l due to the high variety in institutional settings but also because many barriers are interconnected and reinforcing. Living Labs should use a flexible and adaptable approach to find the right intervention points to tackle the RRI-related issues deemed most relevant by stakeholders with the appropriate measures available within the context-dependent conditions.

# 5 References

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