Responsibility
Navigator

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The Responsibility Navigator was developed by the Res-AGorA project.

ResAGorA

Governance framework
for Responsible Research
and Innovation

The Res-AGorA Project

Res-AGorA is a three-year, EU FP7 project (2013–2016) which has co-constructed a good-practice framework, the "Responsibility Navigator", with practitioners and strategic decision-makers. This framework facilitates reflective processes involving multiple stakeholders and policy-makers with the generic aim of making European research and innovation more responsible, responsive, and sustainable.

This framework was developed based on three years of intensive empirical research comprising an extensive programme of in-depth case studies, systematic 'scientometric' literature analysis, country-level monitoring (RRI-Trends) and five broad-based co-construction stakeholder workshops.

The resulting Res-AGorA Responsibility Navigator was conceived as a means to provide orientation without normatively steering research and innovation in a specific direction. Furthermore Res-AGorA's "Co-construction Method" is a collaborative methodology designed to systematically support and facilitate the practical use of the Responsibility Navigator with stakeholders.

For more information please visit:
www.responsibility-navigator.eu or **www.res-agora.eu**.

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Responsibility Navigator – Why, what, how?

Research and innovation activities need to become more responsive to societal challenges and concerns. The **Responsibility Navigator**, developed in the Res-AGorA project, supports decision-makers to govern such activities towards more conscious responsibility. What is considered "responsible" will always be defined differently by different actor groups in research, innovation, and society – the **Responsibility Navigator** is designed to facilitate related debate, negotiation and learning in a constructive and productive way. The **Responsibility Navigator** supports the identification, development and implementation of measures and procedures that can transform research and innovation in such a way that responsibility becomes an institutionalised ambition.

Preamble

Research and innovation (R&I) activities and outputs are subject to increasing public and political scrutiny. In response, R&I organisations and actors are making efforts, or are being asked to make efforts to shape their activities and performance in ways that are socially desirable and ethically acceptable. Major actors such as the European Commission have characterised this ambition as 'Responsible Research and Innovation (RRI)'. The demand for responsible action in R&I has evolved since the 19th century. Originally, the main aim was to prevent fault and to minimize risk. More recently, requests for responsibility have also included precaution and responsive attitudes of researchers and innovators. In 2015, the European Commission stated that "Responsible research and innovation is an approach that anticipates and assesses potential implications and societal expectations with regard to research and innovation, with the aim to foster the design of inclusive and sustainable research and innovation." Negotiations and re-definitions of responsibility in R&I will continue in the future and further evolve. The Res-AGorA **Responsibility Navigator** is designed to facilitate the related debate, negotiation

and learning in a constructive and productive way.

What is desirable and acceptable is in fact highly subjective. At the same time, stakeholders expect researchers and innovators to perform in ways (and/or obtain results) that are based on commonly agreed definitions and criteria of what responsible research and innovation is, and what it is not. We propose to achieve this by following a set of principles and requirements, in other words, by applying an orientating framework to enable 'navigation' towards learning and institutional transformation. We call this the Res-AGorA **Responsibility Navigator**, and expect that, by adopting and adapting it, R&I performed in Europe will become more effectively aligned with societal needs and concerns.

The Res-AGorA **Responsibility Navigator** is directed at several target groups who may play one or several of the following roles:

a) those who lead R&I organisations and procedures towards more responsiveness and accountability,

b) those setting priorities, defining policies, and developing evaluation and assessment tools, and

c) those who mediate between different levels of the innovation system by bringing together different actors and different interests as well as defining the practical implementation of governance instruments.

These 'change agents' are motivated and able to work as 'institutional entrepreneurs', seeking to lead the R&I performed in Europe in the direction of more responsiveness. They typically work at research funding organisations, are on the boards of universities or companies, or in professional organisations.

The Res-AGorA **Responsibility Navigator** offers all of those actors support and guidance for reflecting on and intervening in decision making and negotiation processes to fund and orientate R&I activities, whereby these processes can be located within or between organisations. The Navigator supports all those actors in organisations who seek to take and influence those decisions in a broadly informed and reflexive manner, taking into account the views and preferences of actors affected by their decision and with a view towards the societal desirability and acceptability. Thus, it shall facilitate exchange about the nature of responsibility in any given situation, and for the implementation of appropriate instruments and governance arrangements.

Moreover, building on the collective nature of responsibility-oriented governance and the challenges therein, the Res-AGorA **Responsibility Navigator** will also inspire institutional actors such as intergovernmental organisations, research performers, expert bodies and advocacy groups, particularly those operating at the analytical, strategic or procedural levels, and responsible for guidance, programming or performance of activities related to R&I.

The framework can be used by actors facing dilemmas and complex situations impeding the governance of responsible research and innovation, and by actors wanting to reflect strategically on their own position as well as that of others in navigating R&I towards higher levels of responsible action. Since these actors have different roles and different needs, they will have to make choices about whether and how to tailor the Res-AGorA **Responsibility Navigator** to specific contexts.

The **Responsibility Navigator** is a result of the collective work of the Res-AGorA project team (2013–2016). The project built on existing ideas and models associated with R&I governance in different contexts. It analysed existing *de facto* responsibility-related governance arrangements, including activities such as Corporate Social Responsibility (CSR) schemes, societal mission-oriented research funding practices, citizen science initiatives, ethical reviews and safety regulations, technology assessments, etc., and conducted a range of structured conversations and workshops with relevant stakeholders.

The Res-AGorA **Responsibility Navigator** is conceived as a 'thinking tool', not only intended to make individuals, organisations and institutional systems more responsive towards societal needs and preferences, but also to make existing and new governance instruments and arrangements robust, and to allow, encourage and process contestation, learning, and experimentation. Ultimately, this will facilitate institutional transformation at a systemic level, allowing RRI to emerge in a constructive, bottom-up process. The key to the Res-AGorA **Responsibility Navigator** lies in the reflexive, self-organised and collective

nature of responsible research and innovation, where governance dynamics are shaped by specific instruments and arrangements, and where the design and operation of all instruments (even the formulation and operation of hard law) are not a given, but are actively constructed through processes of problem framing (appraisal), coordination and negotiation. In this context, what is judged responsible is part of these interactions, where the responsibility-related governance takes place in sense- and decision-making processes in a collective way.

However, it is important to keep in mind that, if the proposed framework is to make a difference, the resulting actor strategies must aim for effectively transforming present day practices of R&I towards 'responsibilisation', i.e. a process by which the involved actors internalise the issues of concern, enabled by appropriate organisational conditions and governance mechanisms. Given that there will always be multiple responsibility-related goals (from safety and sustainability to inclusiveness and responsiveness), as well as different instruments to promote them (from professional training and education, design principles, stakeholder and public dialogue to

regulation by voluntary codes as well as hard law), the **Responsibility Navigator** aims to facilitate strategic reflection and continuous formative evaluations, to understand how instruments interact and play out at different levels and contexts, and to what extent goals are ultimately achieved.

We claim that these processes involve effective transformation towards a set of articulated normative goals embedding values into practices and processes, and orienting action towards those goals. We call this the 'deep institutionalisation' of responsible research and innovation, which, in practice, represents a process of cultural change.

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Ten governance principles and requirements for responsibilisation

The following is a brief description of the Res-AGorA **principles** and requirements for responsibility-related governance. It includes a set of **questions** which those interested in 'navigating' towards responsibilisation in Europe and beyond would have to ask themselves in order to arrive at practices and directions that are widely accepted. The ten principles are organised into the three dimensions of (1) Ensuring Quality of Interaction, (2) Positioning and Orchestration, and (3) Developing Supportive Environments. Principles 1–9 are **illustrated by short fictive cases.**

Ten governance principles and requirements for responsibilisation

Ensuring quality of interaction

Positioning and orchestration

Developing supportive environments

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Ensuring quality of interaction

Principle 1: Inclusion

Navigation towards responsibilisation is more likely to be transformative if it takes into account the diversity of actors relevant to the problem or project. It should do so in a way that engages these actors directly and effectively in debate or joint activities, and considers both their material interests and core values. The actors should perceive the processes of sense- and decision-making as legitimate, transparent and trustworthy.

The guiding questions to follow this principle are:

Are all the relevant actors included/considered in the debates?

Are all the included actors relevant and able to make effective contributions to the debates?

Example 1: Developing a roadmap for an emerging technology based on a broadly accepted process

The research councils of a medium-sized European country are exploring the future potential of an emerging technology, synthetic biology (synbio). The pressure from a number of government departments (a coalition of economics, business and technology/innovation) is to focus funding on advancing technological development as an expected route to accelerating economic and technological growth, but their proposed process is a hurried one and does not allow time to organise a dialogue involving broader participation of societal actors and stakeholders. However, the research councils responsible for biology and chemistry, supported by funding available from the supra-national governmental body, organise a national discourse on the future of synthetic biology and its contribution to a range of societal objectives across health, well-being, environment, sustainability, and economic growth. Inclusion is managed by a combination of online consultations (*principle 1: broad openness, bottom-up*) and physical meetings (*principle 1: targeted inclusion, sufficient level of representation*). They ensure that the invitation list for the physical meetings is coordinated with the ministry of science and education, the ministry for economics and the research council responsible for social sciences to include a broad variety of stakeholders (*principle 1: heterogeneity of actors to be included, broad ownership of debate*). Invitees include firms and research organisations seeking early commercialisation, actors and organisations that have been openly sceptical about an accelerated development of applied synbio research, as well as observers from social science (including philosophy and ethics). Care is taken to ensure that diversity of opinion is represented from the outset, including how the topic is framed (*principle 1: initial openness of the framing of an issue*). The roadmap is drafted in an iterative and dynamic process by a group of authors reflecting diverse perspectives. Minority views are clearly expressed in the final roadmap and its operationalisation provides for resources to enable on-going adaptive and inclusive dialogue and action including the full range of stakeholders (*principle 1: demonstrating inclusion, accepting dissent*).

Ensuring quality of interaction

Principle 2: Moderation

Organisational modes appropriate to build trust, collect data and organise dialogue are needed in the form of 'fora'. These are institutionalised places or procedures for interaction, and for 'bridging' different perspectives between contesting actors, after which some alignment of goals and procedures is expected.

Guiding questions include:

Are moderation mechanisms being put in place that allow the build-up of trust, and a broad exchange of arguments and evidence?

Do all the actors involved and affected accept these mechanisms; are they perceived as legitimate?

Example 2: Moderated discourse to rebalance national research funding profiles

As a matter of high political priority, the government of a small European country is reconsidering the balance of research funding between calls for research activities directed through thematic programmes / grand challenges, and those without thematic prioritisation. The Science and Technology Advisory Council (STAC) is tasked with implementing a forward-looking process to realise this. STAC is composed of representatives of all major political parties, employers' and employees' organisations, civil society organisations and consumer groups, and scientists representing different disciplines (including social scientists), aiming for a balanced representation of organisation type, level of seniority, and gender (*principle 2: initial moderation through neutral actors without operational budgets and a representation of major vested interest*). A Task Force (TF) is established, representing a wide diversity of societal groups and perspectives, giving each member time to design and implement a systematic and open process of evidence gathering (background reports, international hearings etc.). The TF appoints an independent figure to draft a report which outlines different models of, and the pros and cons for, thematic prioritising in research funding based on evidence from a number of comparable innovation systems. The process separates the decision about the share of thematic prioritising in research funding from the choice of themes (*principle 2: building trust in the process as the basic decision is taken without focusing on specific areas, providing robust data*). In response to the report, STAC asks for Parliament (through two committee meetings with open inclusive hearings) for an online consultation, the results of which are detailed in an Annex to the TF report (*principle 2: moderation iterates between advisory context and political context, combining different sources of legitimacy*). On STAC's recommendation, core funding is reduced and funding in competitive and thematically-defined areas is increased, followed up by a well-received, challenge-oriented foresight process to support a further transparent dialogue to frame, define, and prioritise the definition of 'challenge' areas, based on a similar model of neutral moderation.

Ensuring quality of interaction

Principle 3: Deliberation

Sense-making and decision-making among actors with different knowledge claims and positions, not only between organisational actors but also individuals, require confronting, synthesising and eventually compromising across different perspectives which might arise from various 'knowledges'.

Guiding questions include:

Are key substantive and procedural issues being discussed?

Is the evidence base underpinning the discourse broad and robust?

Are the discussions leading to better mutual understanding of diverging viewpoints and their origins as well as better overall awareness and appreciation of available evidence?

Example 3: Organising a co-constructive deliberation process on responsible innovation

A team from nine universities and research institutes wins a competitive European research grant to develop a framework for fostering RRI. A co-construction deliberative methodology is adopted, involving representatives of relevant organisations (academics, research funding councils, research performing organisations, small businesses and multi-national corporations, utilities, local and national governments, CSOs, and known individuals with a commitment to and expertise in Science and Society dialogues) (*principle 2: sense-making and decision-making among actors with different knowledge claims and positions*). Five two-day stakeholder workshops are held in different European cities with approx. 80 participants in total. The workshops are themed to test the prototype framework in different contexts. The first two focus on technology controversies – energy, climate change and shale gas fracking; and the genetic modification of food. The third and fourth look at problems of responsibility in R&I from the perspective of research-funding and -providing organisations, respectively; the final workshop of participants with a spread of backgrounds and functions focuses on strategic actors. The workshops use techniques to maximise opportunities for participants to actively engage in the process (*principle 3: opening up for mutual understanding*); although team members are present at the workshops, they influence the deliberation as little as possible, with the primary aim of listening in order to understand the real-life working contexts of participants and their perceptions of the prototype framework. The deliberation process is supported by a fully transparent empirical knowledge base, generated by the research team over two years. The process of co-constructive deliberation is realised through a comprehensive multi-disciplinary and multiple-stakeholder process of critical reflection. The result is a stabilised framework of ten key governance principles, communicated in a style sensitised to practitioner audiences (*principle 3: discussions lead to some level of consensus*). The principles are supported by fictive case vignettes based on the team's empirical research. The final framework becomes a tool to support self-reflection and the strategic action of practitioners – user-friendly and integrating participants' recommendations.

Positioning and orchestration

Principle 4: Modularity and flexibility

Legitimate and effective governance is founded on a careful combination of 'hard' and 'soft' regulatory mechanisms. It allows for self-regulation and organisation, as well as external control and accountability structures (e.g. supervision), where the flexibility of governance arrangements should not lead to arbitrariness.

Guiding questions include:

What is the existing mix of governance tools that influences the debate and decisions concerning the issue at stake?

Do affected stakeholders regard this mix as appropriate?

How difficult are they to implement and what could be done to support implementation?

Are there enough financial resources, managerial capacity and appropriate organisational conditions in place to support their implementation jointly or independently?

Are they easily understood by the stakeholders involved?

Example 4: A flexible code of conduct for responsibility across institutions and research practices

A large semi-public lab in the field of nano-toxicology is committed to the highest ethical standards and the accommodation of societal concerns and needs, with recruitment procedures and training aimed at establishing and promoting a diverse workforce. The institute has established a number of internal principles and processes to achieve this mission, which are reviewed periodically (*principle 4: modularity*). One core instrument is a professional code of conduct for engineers and scientists in the field of nanosciences and technologies, which takes account of national differences in professional traditions (*principle 4: flexibility*). Its contents are integrated into the institute's internal guidelines and employment contracts, and promoted throughout the organisation from recruitment up to all major activities (*principle 4: communication, mechanisms to be easy to understand*). Further, the institute conducts periodic internal and external seminars and meetings to deliberate and

anticipate the ethical, health, natural environment, regulatory and socio-economic implications of the laboratory's research lines and how their research relates to societal challenges. In addition to these soft instruments, there is a formal sign-off process for all research activities (including, but not limited to, external research proposals), which again links to the code and the internal guidelines (*principle 4: combining 'hard' and 'soft' regulatory mechanisms*). Working with the code gives staff a "responsibility literacy" and creates awareness internally (see also *principle 7: capabilities*); it also positions the institute as a credible actor within the broader professional and societal discourse on responsibility, able to influence debates both specifically and generally towards a more systemic adoption of and commitment to responsibility by organisations (see also *principle 5: subsidiarity, influencing and taking advantage of higher levels of governance*).

Positioning and orchestration

Principle 5: Subsidiarity

Complementary to the self-governance and self-control expected to result from aligning a mutual understanding of responsibility-related values and commitment, some level of hierarchical command-and-control may be necessary in certain circumstances. This should be performed mainly by independent actors. These must be capable of overseeing and enforcing, perhaps via a mix of soft and hard pressures such as requiring transparency about R&I governance practices, naming and shaming, sanctions, and accountability, where bottom-up and top-down RRI governance approaches should be balanced with and attuned to the specific situation. In this context, the 'external' authority should have a subsidiary (that is, a supporting, rather than a subordinate) function, performing only those tasks which cannot be performed effectively at a more immediate level.

Guiding questions involve:

Are mechanisms of enforcement needed to support decision-making and compliance? If so, are they in place?

Are there the immediate capabilities and technical know-how to implement them?

Are there the appropriate internal or external capacities to support or enforce agreements either ex-ante, during, or ex-post the decision-making, performance and outcomes resulting from R&I?

Example 5: A dialogue between European supra-national and global governance organisations on responsibility in research and innovation

A supra-national European organisation has spent years developing an understanding of RRI and mainstreaming it within its own science and innovation programmes. It approaches a global governance body, initiating a conversation on how to standardise and up-scale this concept to the global level, upholding three core tenets of RRI: participative governance, orientation to societal challenges, and futures-oriented anticipation of technological development and the global political economy. This is welcomed, but in order to canvass a wider range of perspectives, the global organisation initiates a consultation, seeking evidence from other countries around the world, supra-national regional governance bodies, multi-national companies, and civil-society organisations (CSOs) with cross-border and North-South remits. Evidence shows that RRI, as interpreted by the European supra-national body, has in fact originated from quite a concentrated cluster of nations and from its own 'science in society' legacy programmes. The leadership of these nations is acknowledged but, beyond this limited cluster, other countries have a much lower awareness and still less experience of implementing RRI. These other countries vary considerably in economic, political, social and cultural terms, putting them at a disadvantage should the supra-national body seek to impose a common understanding of RRI. Multi-nationals and global CSOs give a mixed response. The standardisation of concepts is welcomed by some, but is resisted by others as a new form of imposition by strong nations. Rather than simply up-scaling a particular interpretation of RRI, the global organisation proposes a 3-year initiative in which countries and regions from across the globe (supra- and sub-national) exchange perspectives and knowledge of what it means to undertake research and innovation in a responsible way (*principle 3: balancing bottom-up and top-down RRI governance approaches*). This knowledge will be shared through the intermediation of the global body, enabling nations and CSOs and business fora to learn from, adapt and translate the concept within their own contexts (*principle 3: self-governance and self-control overseen by independent actors*), whilst still acknowledging the three core tenets of RRI.

Positioning and orchestration

Principle 6: Adaptability

Governance towards responsibilisation should be able to reflect different historical developments of R&I systems and changing conditions. Therefore, such calibration requires an assessment of whether governance arrangements still effectively and legitimately serve responsibility goals. This must consider that the goals, costs and consequences of governance instruments and arrangements may also change over time.

Guiding questions include:

Is the current understanding of the governance challenges still valid despite changes in the context and conditions?

If the supporting assumptions and mechanisms fail, can we replace them without major problems and how?

What (positive and negative) non-intended effects may result from their implementation?

How could they affect the current distribution of burdens and benefits among the stakeholders involved?

Example 6: Institutionalising ethical business practice in a highly contested technological area

A medium-sized firm leads research on the digital genome and its application to medical innovation. With the advent of rapid sequencing and digital synthesis of DNA/genomes, it capitalises on the many commercial opportunities in the fast growing area of personalised health. Fully aware of the threats posed by the 'transparent individual', including pressure from employers and insurers to disclose personal health information, the firm uses various responsible governance mechanisms. Its own ethics committee meets quarterly to advise researchers, product and marketing managers on the ethical and societal implications of new products and processes. The ethics committee comprises different research and business representatives within the organisation (senior/junior individuals), external stakeholders, and experts, including social scientists (*principle 1: targeted inclusion, sufficient level of representation*). Recommendations by the committee require a formal response by the responsible researcher, product manager and the firm's leadership before implementation. A 'roving' social scientist is embedded in the company to advise on socio-technical integration, building reflexive capabilities to question the status quo, facilitating bottom-up participation, guided by top-down protocols. This approach supports the development and adaptive translation of RRI principles into practice across the business. In addition, an external advisory board representing divergent views meets every two years to reflect on the field's development, its application context and the broader societal and political trends as novel business models associated with the digital genome emerge (*principle 6: adaptability, in-built mechanisms to reflect on the appropriateness of the existing internal governance mechanism*). The board reviews the work of the ethics committee, its guiding mission, principles, operationalisation, and proposes new or revised working practices, and how the organisation can institutionalise responsibility to increase employees' awareness of societal concerns (*principle 7: capability building; principle 8: capacity*). The firm's CEO participates, and encourages employees to shape the broader societal multi-actor discourse on genomics and personalised health. The firm receives an award for its effective implementation and leadership in RRI; its share price, turnover and profits continue to grow.

Developing supportive environments

Principle 7: Capabilities

Fostering responsibilisation crucially depends on reflexive individuals capable of recognising, anticipating, deliberating, communicating, and collectively pursuing societally desired processes and outcomes of R&I activities, and evaluating them. This process requires a certain level of 'governance literacy,' which is particularly important for the next generation of public and private researchers, programme and research managers, policy-makers and members of civil society organisations, where learning and 'un-learning' new concepts via formal training, or practices for assessing 'excellence' involving responsibility-related values are determinant.

The guiding questions are:

Are there the necessary individual capabilities to achieve the intended goals related to responsibility-oriented processes and outcomes?

If not, how can they be developed?

Example 7: Creating the conditions and processes needed to create a new generation of RRI-conscious researchers

A research funding organisation seeks to enable greater reflexivity and anticipatory awareness of issues of societal concern in the community it funds. It has long adopted a formal framework that guides its programme design as well as its funding application and approval processes. Relying on formal principles in project proposals has resulted in RRI becoming yet another tick box exercise. The organisation thus starts to focus on building the capabilities and awareness of its researchers, starting with the young generation of researchers and their employing organisations. Now, all funding applications have to show how they propose to accommodate specific challenges such as risks, ethical concerns, and further societal challenges (by incorporating participation / engagement, for example). All proposals are required to allocate part of the budget and research time to issues of interaction and awareness-building beyond traditional 'impact' considerations. In addition, to be eligible, proposals must demonstrate how the supporting organisation will enable researchers to identify, plan and implement an action plan to deliver an RRI portfolio (see *principle 8: capacity*; and *principle 5: modularity, soft and hard instruments*). Importantly, the funding organisation also conducts a series of three-day workshops for the young leaders of funded projects across the country. Principal Investigators (responsible for line managing the early career researcher) are expected to participate in such a workshop early in the project. This not only involves teaching general principles and guidelines, but also a collective critical reflection of responsibility challenges and ways to deal with them. Each PI is required to draft a responsibility report two months after the workshop, signed off by their own line manager, committing the host organisation to supporting the early career researchers, recognising the additional work and resources necessary to implement personalised RRI plans. The early career researchers receive progressive certificates of competency in RRI, and build credits towards a new vocational qualification in Responsible Innovation, which is becoming increasingly recognised by employers. As a result, the system builds a more reflexively aware, questioning, and therefore bench-effective, RRI-literate workforce.

Developing supportive environments

Principle 8: Capacities

For individual capabilities to unfold and express themselves, they need a supportive organisational and network infrastructure, such as access to information and resources for participation. This requires spaces for reflection, interaction and negotiation, appropriate incentive structures, and an open knowledge base.

Similar to individual capabilities, systems' capacities involve answering guiding questions such as:

Are there the necessary systems' capacities to achieve the intended goals related to responsibility-oriented processes and outcomes?

If not, how can they be developed in a viable way?

Example 8: A Civic Society Organisation lobbies for institutional change and system capacity-building

A large Civic Society Organisation (CSO) is aware of efforts to improve the capabilities and sensitisation of researchers towards responsible innovation criteria via training for individuals, especially early career researchers (in participative and co-construction methods, the development of researchers' own reflexivity and sensitisation to societal problems, risks and impacts, inter-disciplinary working and futures-oriented methods). Research councils have begun to include these training requirements and institutional responses in new research calls (*Principle 7: Capabilities*). However, the CSO believes there is a need to go further to achieve systemic institutional change in order to redress the current dominance of scientific, business and government elites. It acknowledges that current institutional disincentives such as long lead times to publication and publication league tables together with competitive pressures within the new product development pipeline of large businesses run counter to the aspirations of responsible innovation. The CSO argues for a more fundamental role of civil society in constructing R&I pathways, with earlier participation in technology assessment dialogues, and involving values-centred small and medium and social enterprises. The CSO leads the creation of a network of CSOs covering a range of interests and remits from health and well-being to the natural environment and human rights (*principle 8: a supportive organisational and network infrastructure*). The network seeks to develop capacity internally and beyond with external funds from government and other sources (*principle 8: available spaces for reflection, interaction and negotiation and an open knowledge base*). It lobbies for deeper institutional change within the dominant institutions of research and innovation to achieve greater diversity in the workforce, an early and transparent dissemination of results, and the engagement of wider constituencies of users and stakeholders of research and innovation. However, in order to effectively engage and influence systemic change, the network needs to build the capacity of its network members as well, in order to be able to provide a voice that can balance that of other stakeholders within the emerging dialogue on what constitutes responsibility in research and innovation.

Developing supportive environments

Principle 9: Institutional entrepreneurship

Both capability and capacity-building are usually not self-organised activities. They require leadership, top-level and continuous support, vision and strategy, lobbying and rewarding institutional improvement in order to facilitate change towards responsibilisation.

A key guiding question is:

Are there credible leadership capabilities and institutional conditions in place for change agents to help transform the status quo?

Example 9: Organisational transformation within a large US-American university

A decade ago, a new President was appointed at the Abernath University, USA, a very large public university. President Stark had a strong vision of a 'Good University', and was critical of the institutionalised model of top-league American universities, which he believed to be exclusive and narrow in their faculty and student base, working in discipline silos, and unconcerned about social problems in regional environments. His vision of 'responsibility' was to demonstrate how a public university could perform successfully in financial terms, yet be founded on the inverse normative criteria, i.e. an inclusive student base, excellent science, and inter-disciplinary approaches addressing social problems (*principle 9: leadership, vision and strategy*). Many senior faculty members embraced this vision and joined the management team, whilst others who shared it were recruited. A new organisational structure was developed along inter-disciplinary lines of problem-oriented centres and institutes. Faculty staff took on multiple identities according to their problem-focused centre, their teaching host school, and their 'normative home', e.g. sustainability. Networking across these identities was facilitated through meetings and events, and new inter-disciplinary centres were established (with five-year reviews) (*principle 9: capability and capacity-building are not one-off activities*). Middle tiers of Principal Investigators and faculty members were recruited who shared the broad vision, translated to their field, and who were entrepreneurial, forming inter-disciplinary teams to bring in new grants. There were turbulent years of disruption and change and some left who were not comfortable with the new model. Ultimately, the grant income of the university has increased four-fold and the student body has grown dramatically, and now reflects the ethnic demographic of the State with a focus on students whose parents did not attend university. The model has been communicated through books co-authored by Stark, many YouTube videos and Stark's talks around the world. He entreats others not to simply replicate the model, but to adapt it to prevailing local social contexts and changing global problems.

Developing supportive environments

Principle 10: Culture of transparency, tolerance and rule of law

Only basic democratic principles such as the rule of law and freedom of speech will make responsibility-related governance effective and sustained over time. For this reason, the ability to make claims and to invoke legal or political means is a necessary condition for fostering responsibilisation in different organisational settings and arrangements. Enacting the aforementioned governance principles implies supporting individuals' ability to think and act in a proactive way and under the rule of law. Actors should feel empowered by the appropriate organisational culture.

A basic guiding question in this respect is:

To what extent do the governance mechanisms reflect a commitment to democratic principles and allow actions under the rule of law?

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