



Global Model and Observatory for International  
Responsible Research and Innovation Coordination














## D2.4 Theoretical Landscape



**“This project has received funding from the European Union’s Seventh Framework Programme for research, technological development and demonstration under grant agreement no 321489”**

<b>D2.4 Theoretical Landscape</b>			
Document No.		<b>D 2.4</b>	
Work package No.	<b>WP2</b>	Workpackage Title	<b>Network – Building Consensus</b>
Start Date:		Revision Date:	.....
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Status		<b>R, PU</b>	
Date		<b>26 October 2015</b>	

\* **R = Report**, P = Prototype, D = Demonstrator, O = Other **PU = Public**, PP = Restricted to other programme participants (including the Commission Services), RE = Restricted to a group specified by the consortium (including the Commission Services), CO = Confidential, only for members of the consortium (including the Commission Services).

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## Abbreviations

Term	Explanation
CSO	Civil society organizations
DG	Directorate general
DoW	Description of Work
EC	European Commission
EGWP	European Governance: a White Paper
ELSI	Ethical, legal and societal Issues
ELWW	European Laboratories without Walls
ERA	European Research Area
EU	European Union
FP	Framework programme
FSU	Forward Studies Unit
GMO	Genetically-modified organisms
NGO	Non-governmental organization
PES	Public Engagement of Science
PUS	Public Understanding of Science
R&D	Research and Development
R&I	Research and Innovation
RI	Responsible Innovation
RRI	Responsible Research and Innovation
RTD	Research and technological development
S&T	Science and Technology
SiS	Science in Society
SME	Small and medium enterprises
SSH	Social Sciences and Humanities
SWAFS	Science With And For Society
TA	Technology Assessment
UN	United Nations

## Executive Summary

RESPONSIBILITY project aims to create a network of stakeholders that would adopt and diffuse a common understanding in Responsible Research and Innovation (RRI) between different actors in Europe and around the globe. For that end it is to develop a model and provide a tool for international cooperation, involving the societal, policy and research stakeholders in those activities. The three pillar elements and loci of coordination in this endeavour are: a Network of networks, a Forum and an Observatory. However, in order to diffuse a common understanding on RRI, the establishment of those three instruments for coordination needs to be conceptually justified so that their functional architecture be derived from the mere problematization of RRI.

As specified in the Description of Work (DoW), the Theoretical Landscape needs to address “the conceptual background of RRI” and “the context of emergence of RRI as a governance approach”. The aim is to critically explore not only the definition of RRI but to problematize the conditions of its application. In the pursuit of that task the text makes an overview of the theoretical developments with regard to the notion of RRI, as a well as of its presence in the evolution of the European Framework Programmes. The goal is to demonstrate that those developments are fraught with problems and discrepancies and by doing so to justify RESPONSIBILITY as a procedural space where the latter could be addressed. The deliverable also explores the prospects of RRI in view of the notion of governance. This is very important, since the overall goal of the theoretical and implementation advancement of RRI is inextricably connected with the problem of the institutional arrangements that would create the conditions for its application (which constitutes the issue of governance).

Following this logic, the text starts with a chapter on the institutional and intellectual context that precipitated the emergence of RRI. It pays attention to the process of gradual opening up the realm of European research not only geographically but also with regard to various societal actors. It demonstrates that an underlying theme in that process, from the very beginning of the Framework Programmes, is economic expediency. The opening up has been primarily viewed in terms of bridging science with the market for the purposes of overall economic reinvigoration. It is pursued through closer connection with industry players (and bringing innovation dynamics into their respective realms of entrepreneurship), seeking for explicit economic impact of research (by contributing to the boost of figures of growth, employment, etc.) or even through stakeholders involvement and their perspectives (which does not exclude interest and advocacy groups). But the process of opening up does not stop there. The text traces some developments in the orientation of the European Framework Programmes towards a broader and deeper societal involvement in the governance of research and innovation, and the various modes of interaction sought for a meaningful science-society dialogue.

The emergence and the integration of the RRI framework is part of the overall direction of the EU efforts to elaborate an adequate mode of governance of the relations between the research community and the general public. The evolution of the European Framework Programmes for research and technological development shows a very important shift in the way the European Commission sees the interaction between them – from Public Understanding of Science to Public Engagement in Science. The “Science **and** Society” (FP6) mode of interaction aims at bridging the gap between the two parties by familiarizing the general public with the “esoteric” work of the researchers. The assumption is that better

understanding on part of society will promote its trust in the scientific community. That is why better communication of scientific results is seen as crucial in that respect. The “Science **in** Society” (FP7) mode of interaction goes a step further by acknowledging that a meaningful dialogue is not only a matter of educational efforts intended for the general public, but that the concerns of the latter should also be taken into account. It is recognition for the need research and innovation to be “re-socialized”, i.e. aligned with greater societal needs and directed towards societally desirable ends. The “Science **with and for** Society” (Horizon 2020) gets another step further and emphasizes the importance of the actual engagement of societal actors in the research process. The responsibility of researchers is not exhausted with taking into account societal needs (**for** Society) but also suggests creating conditions for **participation (with** Society) through stakeholder involvement, civil society consultations, user-centred design, etc. It must be kept in mind, however, that although the evolution of the Framework Programmes points to the need for a more inclusive way of decision-making with regard to research and innovation, in the attempts for practical realization of this vision there is still a danger of reducing the idea of the engagement of the public in the elaboration of solution to engagement of the public in a communication process (where it could be instructed, consulted or just formally taken into account in a top-down interaction). What is at stake is its actual participation in the taking of decisions on the matter.

The emergence of RRI is yet another phase of a series of attempts to find the proper governance framework within which a much needed dialogue between science and society could take place. However, as such it introduces the problem of exploring the conditions of creating the adequate governance arrangements that would allow this multi-perspective and multi-level interaction not just to take place but actually to be fertile and effective. Transposed to the ambitions of RESPONSIBILITY, this means that the project (through the Forum and the Observatory) needs to attempt at creating the conditions to address the science-society issue beyond the miscommunication problem. In this sense neither the Observatory is only a repository for documents, nor is the Forum a simple opinion-gathering mechanism. What are the institutional arrangements that would allow meaningful multi-stakeholder deliberation which will lead to actual engagement of the various societal actors in constructing a shared normative horizon, is the crucial question underlying the efforts of the project. And this is a question pertaining to governance. Thus, for RESPONSIBILITY, as a coordination action project which is also concerned with seeking ways to implement the idea of responsible R&I, the utmost challenge is how to translate the promise of RRI (the norm) into concrete context-aware practices (the enactment of the norm and the conditions of its contextual application). More specifically, how to construct and manage the Forum and the Observatory so participants in them not only exchange information and endlessly discuss various emerging technologies and innovation matters but actually engage in the co-construction of solutions in a way that the question of the application of those solutions is addressed in the construction process itself.

This brings the text back to the question of governance and particularly the one of providing the conditions for public involvement in science. The issue of governance gained increasing attention in Europe and served to justify the need for alternative institutional arrangements for policy-making which aim at overcoming the traditional dominance of expert knowledge by opening the process for the involvement of variety of societal actors. In view of research

and innovation governance, this actually means that the mode of interaction between the scientific community and the public can neither be exhausted with science education (communication efforts to “interpret” science in understandable for the public way) nor with consultation (listening to the concerns, fears and comments of the non-scientific community). The normative appeal of governance, as a novel horizontally-oriented approach towards policy-making, is for letting the public in a process of co-construction and joint knowledge-creation.

This is especially relevant for the RESPONSIBILITY project. Its goals go hand in hand with all the above-mentioned concerns for the science-society interaction and represent a concrete attempt to address the problem of governance with regard to the implementation of the concept of RRI. Thus the concept behind RESPONSIBILITY fits the intellectual context and is a product of all the programmatic shifts and developments in the European research policy field. It aims not only to contribute to bridging the communication gap between the two realms. It puts focus on the necessary efforts to restore and enrich the interaction between the research and the policy realms by promoting more visibility of scientific results and achievements so they could be incorporated in the decision-making process. Nevertheless, the real challenge for RESPONSIBILITY goes beyond that. It is not in constructing an electronic medium (by means of the Forum and Observatory) to reproduce the usual consultation mode of interaction. Behind the idea of the “network of networks” approach is not the attempt to construct a communication space for involved stakeholders in the science-society debate, but one where participation goes beyond the usual exchange of information – i.e. one which encourages deliberation so the process of reflexive governance of RRI could be initiated. That is why a recurrent theme in this deliverable is and will be the problematization of the participation – deliberation axis in existing modes of governance of the relations between science and society, including in the concept of RRI, in view of the construction of both the Forum and Observatory for international RRI coordination within the project.

**Chapter 3** is devoted to the theoretical developments in the field of RRI. All of the overviewed accounts share some elements, which are at the heart of the appeal of RRI:

- Innovation as a co-constructive endeavour – involvement of users, stakeholders, citizens, policy-makers;
- Alignment of research and innovation with societal needs and values;
- Addressing the acceptability and acceptance of innovation products and processes;
- Transition from post-factum regulation (risk-assessment and compensation) to a continuing process of governance;
- Temporal re-adjustment of (research and) innovation governance (engagement with the process at the outset; iterative integration of ethical, societal, and legal considerations in an anticipatory manner throughout the innovation cycle).
- Avoiding problematic (contested, controversial, “irresponsible”) innovation and all its negative consequences (costly corrective measures, loss of legitimacy of public institutions, tarnished public image of corporate players, etc.);
- Prospective and collective aspects of responsibility in research and innovation;
- Do not exclude existing tools such as TA, Foresight, precautionary principle;

- Emphasis on making innovation responsible, i.e. the conceptual separation between innovation and responsibility and RRI as a bridging mechanism which would ensure the public uptake of innovation.

RRI accounts usually concentrate on the necessity to bridge innovation and responsibility (i.e. how to make innovation “responsible”). They all try to shed some light on what innovation needs to be responsive to (ethical concerns, societal needs, public expectations), how (e.g. by integrating participatory structures, deliberative mechanisms, value-sensitive design, social experimentation, etc.), by whom (who are the relevant actors/stakeholders/concerned parties) and for what reason (e.g. re-contextualizing science, avoiding problematic innovation, addressing democratic deficits in policy-making, etc.). Nevertheless, they say very little on the procedural aspects of their definition - how practically could those aspects of RRI be translated into a meaningful and efficient practice? This represents the main problem in all RRI accounts – what are the necessary and concrete institutional arrangements that would allow the transition from the idea of Responsible innovation governance to the actual process of responsible innovation governance.

It is evident that Responsible Research and Innovation is in a difficult situation in which the advantages it introduces present those committed with the notion with a series of difficulties concerning the procedural realization of the conditions for responsible governance of innovation. They introduce very serious challenges that need to be taken into account and addressed within the coordination efforts of the RESPONSIBILITY project:

- avoiding top-down understanding of normativity inscribed in the governance process. Simply put, this means that the mode of interaction between the participants in the governance process should not follow well-known models of interaction on the basis of privileged source of knowledge (e.g. as instruction/consultations from experts);
- addressing the cognitive framings of the participants and settling new normative horizons. This means that the mechanism needs to promote overcoming of the potential ideological stances, which in its turn requires achieving a certain level of capacity for reflexivity. What conditions need to be set so participants could be willing and able to question their own presuppositions, beliefs, ideological stances, and “truths”, and not only change their mind but collectively conceive norms that would incorporate the conditions of their application. There is a lack of problematization of the notions of context. Most RRI accounts presume the equivalence of context and external environment. What is left aside is the cognitive aspects, i.e. the fact that the externality and the features of the context are constructed. RRI scholarship will only benefit in its conceptual searches from the recognition and exploration of the cognitive framings which produce and somehow naturalize certain “images” of the context.
- to ensure that participation structures are not exploited only for legitimization purposes (e.g. public-private partnerships) but are effective governance mechanisms;
- to determine the scope/nature/quality/sustainability of the multi-actor involvement. Is a participatory structure allowing deliberation? What diversity of perspectives is reflected in the participatory structure? Is the participatory structure reproducing power asymmetries? Does the governance process ensure continuing engagement of the participants in the inception, application and renegotiation of the norm? How will those actors be defined? For example, the notion of “stakeholders” implies

organized interest, thus high chance of reproducing a non-horizontal mechanism of participation, based on representation of interests.

- addressing the status of ethics. Common approaches place ethics as a complementary concern in the innovation process (post-factum ethical review, checking compliance with professional codes of conduct, adherence to the existing legal framing). Others try to integrate it through interdisciplinary consultations (ethics as specific expertise provided by the social sciences and humanities) or through attempts to take into account values held dear by the public into the innovation construction (value-sensitive design). What RRI approaches need to overcome is the perception that ethics is somehow independent, separate component (one pillar) and not a condition (implied throughout the process) of innovation governance. The other very difficult challenge is to change the perceptions on ethics as an innovation-averse censor of S&T development and establish its image and reality as inevitable and enriching condition of that same development.

It becomes clear that the problem of the implementation of RRI cannot be addressed without realizing the importance of the issue of governance (**chapter 4**). In the recent decades the term “governance” has become an inevitable part of the policy-making vocabulary to denote a change that has taken place/or need to take place in the way societies are being governed. This change is usually depicted in contradistinction to “government” as a vertical, hierarchical, command-and-control type of governing. Governance, on the other hand, is generally assumed to imply flexible, horizontal, beyond the traditional regulatory top-down approaches mode of governing. This shift is usually explained as a reaction to the diminishing capacities of the state to exert its governing powers efficiently and effectively in the context of globalization, increasing complexity and interdependence, growing uncertainty, and cultural and technological changes. It is through the crisis of the national state that new governance modes are being thought upon, usually through pointing out the importance of new actors (e.g. NGOs) in the political process and new forms of interactions (within the notions of collaborative, participatory and deliberative democracy). The emergence of the governance narrative cannot be attributed solely to adaptation efforts to a changed reality. A very important aspect of this process is how all the changes in attitudes and practices go along with the introduction of interpretations on governance by the social sciences, to conceive new rationalities on governing, governance and government through conceptual exploration of new actors, new organizational structures, new policies, and new patterns of public authority.

In European context, during the 1990s the “governance” concept was used mainly in relation to the EU’s external affairs on developmental and third world countries issues within the notion of good governance. Later, when a new strategic direction was initiated by the Lisbon strategy and the need for economic reform recognized, the term “economic governance” gained relevance for denoting the necessary institutional restructuring in the EU framework so that economic performance is facilitated, especially in view of the EU enlargement. This is much in line with the neo-institutionalist approach on governance. In 2001 was issued the first significant document devoted on the problem of governance – the White paper on European Governance which borrowed established principles of “good governance” from the international economic organizations: openness, participation, accountability, effectiveness, and coherence, to be at the heart of the reform of governing of the EU.

But recognizing the need for novel governance models does not solve the problem of the actual implementation of RRI. As **chapter 5** shows, the availability of an institutional framing and operationalization of RRI to six key aspects of implementation does not provide answers as to what would be the concrete procedural conditions that would allow the intended responsible governance of innovation.

In conclusion, the deliverable not only makes an overview of the theoretical developments with regard to the notion of RRI, identifies discrepancies and raises alerts. It also builds an argument for the need of a procedural space where all those could be addressed and demonstrates the potential of RESPONSIBILITY to provide it. This is the reason why the RRI problematic was put in the perspective of the problem of governance and the institutional arrangements that would create the conditions for RRI implementation.

RESPONSIBILITY has the opportunity to address the shortcomings of the “classical” proceduralism in innovation governance and open space to problematize the relation of the actors to their contexts by proposing a more reflexive stance in order to activate their learning capacities. It has the potential to become a means in advancing and further developing a fully-fledged procedural solution (comprehensive proceduralism) suggesting a rule or procedure for the construction of the norm, a reflexive stance to and co-construction of the context, and relevance to the value-systems of the individuals so that the binding force of the norm be promoted (it pertains to its application). This could be a good starting point for the organization of the interaction between the various societal actors in RESPONSIBILITY, in view of the variety of contexts and value-systems they relate to (the project represents a coordination effort with a global scope).

In sum, the Forum and the Observatory come as a response to all the theoretical and procedural gaps concerning the implementation of RRI (inherently addressing the norm justification-application issue). However, they also provide an opportunity to become a means for exploring the limits of the existing procedural approaches, and even to subject to proceduralist scrutiny proceduralism itself, in the elaboration of novel solutions for innovation governance.

## 1 Introduction

The RESPONSIBILITY project aims to create a network of stakeholders that would adopt and diffuse a common understanding in Responsible Research and Innovation (RRI) between different actors in Europe and around the globe. For that end it is to develop a model and provide a tool for international cooperation, involving the societal, policy and research stakeholders in those activities. The three pillar elements and loci of coordination in this endeavour are: Network of Networks, a Forum and an Observatory (see the scheme below) However, in order to diffuse a common understanding on RRI, the establishment of those three instruments for coordination needs to be conceptually justified so that their functional architecture be derived from the mere problematization of RRI. And this is what necessitates the current Theoretical Landscape.

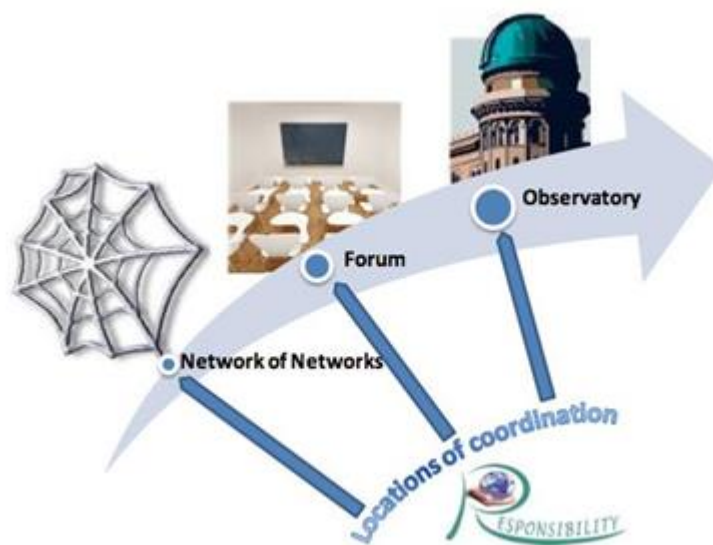


Figure 1: Framework of RESPONSIBILITY project

As specified in the Description of Work (DoW), the Theoretical Landscape needs to address “the conceptual background of RRI” and “the context of emergence of RRI as a governance approach”. The aim is to critically explore not only the definition of RRI but to problematize the conditions of its application. In the pursuit of that task the text will make an overview of the theoretical developments with regard to the notion of RRI, as well as of its presence in the evolution of the European Framework Programmes. The goal is to demonstrate that those developments are fraught with problems and discrepancies and by doing so to justify RESPONSIBILITY as a procedural space where the latter could be addressed. That is why the deliverable does not follow the usual line of presentation with regard to RRI – the discussions on innovation, the precursors of RRI, RRI accounts, critique of RRI accounts and discussion on the notion of responsibility in the context of innovation governance. Instead, it explores the prospects of RRI in view of the notion of governance. This is very important, since the overall goal of the theoretical and implementation advancement of RRI is inextricably connected with the problem of the institutional arrangements that would create the conditions for its application (which constitutes the issue of governance).

Following this logic, the text starts with a chapter on the institutional and intellectual context that precipitated the emergence of RRI. Attention will be put on how the problem of

science-society relations is reflected in the evolution of European research policy. Then, it continues with an overview of the most prominent RRI accounts, goes through some major themes in them (e.g. temporal aspects of RRI, RRI as meta-responsibility, hermeneutic turn in RRI, RRI and value-sensitive design, etc.) and provides comments on their advantages, disadvantages and specific problems. In line with the goals of the Theoretical Landscape, particular attention is paid on the challenges for RRI implementation. This is crucial for the establishment of RESPONSIBILITY as a procedural response to the lack in the existing RRI accounts of conceptualizations on the conditions of the implementation of RRI and reaffirms the importance of the problem of governance. The latter is explored in more depth in chapter 4, which follows the evolution of the notion of governance in various theories and in European and international institutional debates on novel ways of policy-making. The last chapter is devoted to the European Commission's interpretation on RRI with its six "key" aspects of implementation, to the strong emphasis on openness in the governance of innovation, as well to existing governance models and their limitations.

Stepping on that, the overall ambition of the text is to demonstrate that RESPONSIBILITY as a project comes as a procedural response to a peculiar situation with the notion of RRI in which the theoretical accounts provide definitions without addressing the procedural conditions of the implementation while the European institutional rationality delivers implementation "keys" without underlying conceptual justification. This is problematic since it concerns the overall sustainability of the notion of RRI and its future as a framework for responsible governance of innovation in Europe and beyond.

## 2 The Road to RRI

This chapter aims to outline some of the specifics of the institutional context which precipitated the emergence of the notion of RRI. First, it pays attention to the process of gradual opening up the realm of European research not only geographically but also with regard to various societal actors. It will be demonstrated that the axis “research-market” has been established from the very beginning of the Framework programmes and still continues to have primal importance in research and technological development (RTD) policy. This is important since it can explain the strong economic influence on the justification of the idea of RRI, on the interpretation of societal wellbeing (an element of the RRI concept), and on the Commission’s interpretation on governance (which is the umbrella “key” element in the implementation of RRI in Horizon 2020). Second, it follows the evolution of the European Framework Programmes in terms of how they normatively define the mode of interaction between science and society. As it will be shown, a significant development is the shift from the notion of Public understanding of science to that of Public engagement in science. Third, it will demonstrate how the notion of governance as such has gained attention and spurred debates in both the theoretical and policy field, especially with regard to the promise for providing the conditions for public involvement in science. Last but not least, it puts the findings of the chapter in light of the goals and challenges of the RESPONSIBILITY project.

### 2.1 Opening up European research

Opening up the European research field as a way to stimulate innovation dynamics has been promoted since the First FP (1984-1987). The concept of “laboratories without walls” has been at the heart of a series of initiatives, such as the multidisciplinary collaborative associations called European Laboratories without Walls (ELWWs). The intention of the Commission’s R&D programmes at that time was to improve the international competitiveness of European Industry and agriculture, encourage environmental awareness, and avoid duplication of effort and fragmentation of research among member states [1]. This line of taking science out of the confinements of the research facilities and bridging it with various societal actors for better market realization and better public uptake of innovation products was continued in the next Framework Programmes. Nevertheless, it was explicitly sought only after the Fifth Framework Programme of the European Community for research, technological development and demonstration activities (1998 to 2002) [2]. Since then, as it would be demonstrated later in the text, efforts to elaborate the most adequate institutional arrangements for a meaningful science-society dialogue, undergo various changes (e.g. the transition from Public understanding of science to Public engagement in Science). And even if the emphasis currently lies on inter-disciplinary approaches, engagement of end-users in the research process, and taking into account ethical aspects, the original line of integrating research and the market has always been kept. It is evident in the discourse of the Lisbon strategy [3], in the efforts to build and consolidate the European research area [4], in the Europe 2020 strategy [5], and in the current priorities of the European Commission (Juncker’s priorities [6]). In one way or another, the scientific field is perceived as an engine for economic growth.

This is also revealed in a study conducted by Rodriguez et al. [7] on EU Framework Programmes for the period 1998-2010. They have identified four types of integration in R&D solicitations: socio-ethical, stakeholder, socio-economical and industrial. The quantitative analysis shows that the integration increases but the emphasis of that integration is more on industrial and socio-economic rather than socio-ethical or stakeholder (by a 2 to 1 margin).

It is worth noting that the most prevalent type of the integration solicited is the industrial one. It is seen as a way to better connect science with the economic realm to insure marketization of its products on the one hand, and access of industry players to new market niches in interaction with the Commission, on the other. All this, of course, is under the umbrella of the imperative for economic growth and transforming the European market into a fully-fledged knowledge-based economy. Thus “active participation of industrial partners” is perceived to ensure industrial relevance and impact of the research results (their industrial-economic use and exploitation). The second type of integration elicited by Rodriguez and al. is directly oriented towards economic expediency. Under socio-economic integration, projects need to address considerations such as economic growth, employment, economic competitiveness. The focus is explicitly on the economic effects of research.

The third type of integration, dubbed “socio-ethical”, is framed as either through direct involvement of the Social sciences and Humanities (SSH) or indirectly through integrating their perspective by engineers themselves. The so-called ELSification<sup>1</sup> (addressing the Ethical, Legal and Social Issues in RTD activities) is a manifestation of this approach, although its implementation in practice is fraught with difficulties. For instance, the epistemic horizon of technical disciplines will accommodate SSH considerations. Similarly, the cognitive framing of the technical disciplines will interpret the SSH considerations. The dialogue between different realms of knowledge with their epistemic presuppositions is one of the most encouraged interactions by the Commission and yet one of the hardest to accomplish, since gathering together representatives of various fields of research is not enough to enact a meaningful dialogue between them. What are the institutional arrangements that create the conditions for meaningful interaction between disciplines is a question very important for the governance scholarship but also for this text, because it pertains to the main objectives of the RESPONSIBILITY project which are to be realized through the Forum and Observatory as places for such dialogue.

The least prevalent type of integration, pinpointed by the study, is stakeholder integration. It is promoted as part of the appeal for public dialogue with science. It is understood as civil society involvement, which in its turn opens possibilities for non-governmental representation in the research process. This is an important tendency in the overall shift in considering the relations between science and society. Nevertheless, having in mind the variety of NGOs with regard to their nature, goals and interests, it must be noted that one of the dangers is turning the very idea of stakeholder involvement into a lobbying mechanism through such entities in the spirit of interest-based liberalism and the political process as a bargaining process [8]. What is more, it hides the risk of reducing the process of deliberation to mere communication.

As it could be seen, opening up of European research is primarily viewed in terms of bridging science with the market for the purposes of overall economic reinvigoration. This is sought

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<sup>1</sup> The consideration of Ethical, Legal and Social aspects can be traced back to the Second FP, but the explicit insistence on the importance of ensuring that dimension comes with the FP5. It must be noted, however, that the idea of ELSI emerged in the context in the developments in the biological field and grew into a programme (in 1990) as part of the Human Genome Project (HGP) with the aim to: anticipate and address the implications for individuals and society of mapping and sequencing the human genome; examine the ethical, legal and social consequences of mapping and sequencing the human genome; stimulate public discussion of the issues; and develop policy options that would assure that the information be used to benefit individuals and society [110].

through closer connection with industry players (and bringing innovation dynamics into their respective realms of entrepreneurship), seeking for explicit economic impact of research (by contributing to the boost of figures of growth, employment, etc.) or even through stakeholders involvement and their perspectives (which does not exclude interest and advocacy groups). As it could be seen in the figure below, financing pertaining to the socio-economic dimension of European research, has increased in a three FP span (FP4 to FP6). The ratio of funding for socio-economic relevant research to the overall budget of a FP increases from 0.0112 to 0.0218.

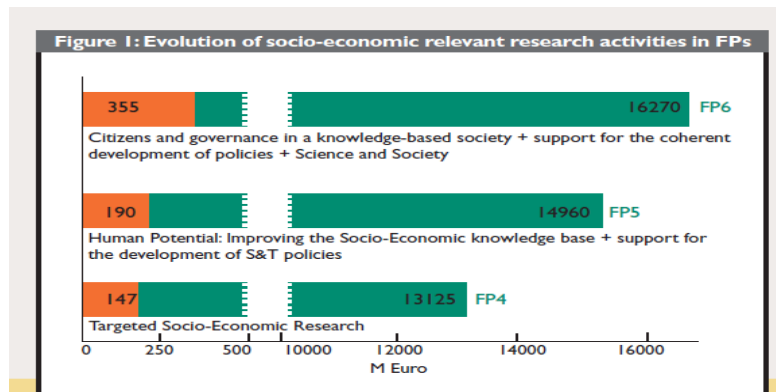


Figure 2: Evolution of socio-economic relevant research activities in FPs [9].

The importance of the socio-economic dimension is further developed in The Lisbon Strategy (2000) and its main aim of building Europe as “the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion” [3]. It calls for organization of the R&D activities in a way to involve more deeply science with socio-economic integration in the pursuit of greater economic growth in a highly competitive global market. In line with those intentions is the effort to build and consolidate a common European research area – ERA (the Sixth Framework Programme and the Seventh Framework Programme are the financial instruments for the realization of that objective) that would allow for more integrated, coordinated and efficient innovation process by:

- the creation of an "internal market" in research (a genuine area of free movement of knowledge, researchers and technology) designed to strengthen cooperation, stimulate competition and optimize the allocation of resources;
- restructuring of the European research fabric, essentially by improving the coordination of national research activities and policies (which account for most of the research carried out and funded in Europe);
- the development of European research policy that looks beyond the funding of research activities, covering all the aspects of other national and European research policies. [4]

After the global financial crisis of 2008 and the following recession, the European Union redefined its overall strategic framework. In 2001 it adopted the Europe 2020 Strategy for smart, sustainable and inclusive growth [5]. Key instrument for the achievement of its goals is innovation. Horizon 2020 is the financial mechanism for the realization of the European Union as Innovation Union. It insists on coupling research and innovation, puts greater focus on innovation as a means for economic revival, and accentuates on the post-crisis need to

steer R&I towards tackling societal challenges. This reconfirms the importance of innovation for the economic development of the Union. However, it also implies that the innovation process needs to be aligned with societal needs and that economic growth is not exhaustive for the latter.

As was demonstrated in this section, an underlying theme in the process of opening up of European research from the very beginning of the Framework Programmes has been the economic expediency. It has been sought not only in the initiatives for overcoming the geographical impediments of an integrated research market but also for opening the research process for various societal actors and perspectives (e.g. industry, NGOs). This is important for the embedding of the present text since it demonstrates some of the roots of the specific notion of governance, adopted by the Commission, which in its turn will serve to explain some difficulties in conceptualizations on the conditions for implementing RRI. It has implications for the RESPONSIBILITY project and its aim to organize a Forum and an Observatory where the problems accompanying the notion of RRI could be addressed. The first one is concerned with ensuring that stakeholder participation is not understood only in terms of engaging the industry in research for better market realization of scientific knowledge (covering the abovementioned socio-economic dimension). The second one relates to need to construct those two spaces in a way to create the conditions for deliberation of a wider range of societal actors so that the meaning of innovation can be addressed beyond the issue of economic expediency while restricting the notion of societal wellbeing (or socially desirable ends) to economic growth.

Stepping on these findings, the next section of the text will trace some developments in the orientation of the European Framework Programmes towards a broader and deeper societal involvement in the governance of research and innovation, and the various modes of interaction sought for a meaningful science-society dialogue.

## **2.2 The evolution of the European Framework Programmes**

This section will pay closer attention on the evolution of the European Framework Programmes with regard to how they approach the problem of science-society relations. This is much needed because it will illustrate some major developments which have led to the integration of the RRI notion in the field of European research. Moreover, the overview below will not only allow to place the RESPONSIBILITY project in view of the identified changes but also to recognize its merits as an attempt to go a step further in addressing the pressing issues of the science-society debate with the help of the Forum and the Observatory it aims to create.

The problematization of the gap between the scientific community and society at large has been one of the recurring themes of European research policy discourse corresponding to the increasing uneasiness of the public with regard to innovation and the pressing issue of its adequate governance. There is a multitude of examples with this respect – from the uses of nuclear technology, through biotechnology and genetically modified organisms (GMO) to climate engineering. While the need for a “dialogue” and “alignment” between science and society has been addressed in one way or another in earlier framework programmes, the considerations with regard to Ethical, Legal and Social Issues (ELSI) seems to be given more attention since FP5 under the umbrella of socio-technical integration.

In the overall evolution of the Framework programmes, the Fifth FP is aimed as instrument for realizing the transition towards an European knowledge-based society through

democratic governance which must “ensure that **social and economic** issues are taken into consideration in research activities, and that citizens are **informed** about and are **aware of the social aspects** with regard to scientific and technological progress” [9, p. 6][emphasis added]. According to its provisions, the dialogue between science and society needs to be mediated by the political level, which translates societal needs (in connection with society) into policy needs directed at the RTD community. It initiates RTD response and RTD policy vision, which in turn is translated back as a policy response to society. Within this framework the problematic moment is the direct communication between science and society. Those efforts refer to the notion of “Public understanding of science” [10] (circulating since the 1980s) which put emphasis on the awareness of policy-makers, citizens and industries by means of greater presence of science in the media, science education programmes and development of the public communication skills of the scientists themselves. In the FP5 this has been promoted with the help of the “Raising Public Awareness” [11] activity.

The Sixth Framework Programme of the European Community for research, technological development and demonstration activities, contributing to the creation of the European Research Area and to innovation (2002 to 2006) aims at integration of European research into a common internal market for science and technology (through ERA). The mode of interaction between the research realm and the public is implied in an action called “**Science and Society**”, whose aim besides enabling ERA and embedding it in all FP6 projects while addressing in one way or another gender, ethical (compliance with current legislation and human rights declarations), communication (through dissemination activities) and education (stimulating interest in the young) activities. In 2001 a “Science and Society” Action Plan has been launched in the pursuit of a better connection between science and the European citizens. This comes as a response to the need for considering various modes of governance with regard to society, technology and innovation, justified in “Science, society and the citizen in Europe” [12], which triggered the debate about new partnership between science and society, addressing the problem of governance in the realm of science and technology. Key normative insistence in the proposed concept for **partnership** is bridging the gap between those two realms, addressing the general public mistrust and disinterestedness in science and its achievements, and facilitating the integration of R&D in the overall economic process. This includes:

1. Structuring research policies around societal aims

It must be noted that societal aims are depicted as ones corresponding to the main Lisbon strategy’s target – globally competitive knowledge-based economy built on economic growth, sustainable development, social cohesion;

2. Involving society in the scientific venture

This direction of the partnership is particularly interesting for the aims of the current text since it established the rationale for participatory structures, founded on the dialogue with what is referred as “civil society” - “[t]he involvement of representatives of civil society needs to be encouraged and increased in the various stages of the research venture, particularly in defining the priorities of publicly-funded research” [12, p. 8]. The consultation mode of dialogue first seeks coordination between research and industry on forming scientific policy, and second, scientific consultation on policy-making issues for governmental and institutional bodies (through consultative or advisory bodies within institutions).

3. Foresight initiatives (such as Technology Assessment) as participatory tool for elaborating policies on common for the interested parties' topics.

Foresight has been establishing as a novel process of knowledge generation in view of the future with two main focuses: interdisciplinary dialogue (technocratic decision-making) and engagement of the citizens in elaborating futures-oriented solutions in various fields (democratic decision-making) [13].

4. Involving the economic, social and human sciences to provide better understanding and management of scientific development.

Here, the governance framework for making scientific advancement and innovation “more responsible” relies on risk management (assessment, management and communication), the precautionary principle (to deal with scientific uncertainty), expertise and accessibility of expert opinion to the public. However, the role of scientific expertise in the public discussion on hazards raises the problem of responsibility in this area, mainly through the notion of accountability: the responsibility of the experts as providers of opinions and recommendations on a heatedly debated (even in the scientific realm) matters; and the responsibility of the political authorities as the ultimate decision makers on which policy direction will serve best the public interest.

As it could be seen, the problem of responsibility has been addressed before the emergence of the notion of RRI but in a restricted sense, concerning the specific responsibility of a researcher or a policy-maker in a very complex context fraught with uncertainties and hidden risks. In contradistinction to RRI, which advances a prospective and more positive understanding on responsibility, here it is meant a negative interpretation of responsibility. Briefly put, it refers to common conceptions of responsibility in connection with some perceived wrongdoing. It emphasizes culpability (assigning fault or guilt) and compensation (quantification of responsibility and calculation of risk). This represents a legal-oriented notion of responsibility in which the focus is put on the negative consequences of certain acts (damage, harm, or cost) which need to be repaired by providing the mechanisms to *hold* someone responsible (see GREAT Theoretical Landscape [14]).

Among the proposed new structures for dialogue between science and society are citizens' juries/panels/conferences with the aim to enrich the traditional democratic dialogue and help decision making. Improving the public's understanding of science is key for those endeavours. Encouraging the scientific literacy of the public is seen as a prerequisite for overcoming the widespread mistrust in research and innovation. At the same time improved scientific communication, boosting the attractiveness of science and science careers, and addressing the underrepresentation of women in research are seen as much needed.

Just as in FP5, what is recognized to be main problem in the science-society dialogue is the **miscommunication** of scientific results to society – both to the general public and policy-makers. Stepping on that understanding, the solution is logically sought in providing the conditions for science to present its work in a more simple, attractive and understandable language, i.e. to go beyond the confines of the highly specialized scientific discourse. Thus the question of the governance of research in FP6 is preoccupied with achieving the strategic goals of the European knowledge-based society but also with ensuring, legitimizing and facilitating societal uptake of innovation. European institutional concerns with regard to the problematic relations between S&T and the public stem from the observation that “advances in knowledge and technology are greeted with growing scepticism, even to the

point of hostility, and the quest for knowledge no longer generates the unquestioning enthusiasm that it did some decades ago” [12, p. 5].

The Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007-2013) [15] set a mode of interaction which was redefined with the aim to foster public engagement in a two-way dialogue between science and civil society. Whereas FP6 insists on partnership between the two realms in question, within FP7 and its search for new governance models, the accent is on **integration** by promoting “Science **in** Society” (SiS) theme within the “Capacities” programme for a “thriving knowledge-based economy” [16] since it is

“[i]mperative that a *social and cultural environment conducive to successful and exploitable research be created*. This means that legitimate societal concerns and needs are taken on board, entailing an enhanced democratic debate with a more engaged and informed public, and better conditions for collective choices on scientific issues, and the possibility for civil society organizations to outsource research in relation to their concerns. It should also establish a climate favorable to scientific vocations, a new surge of research investments and the subsequent dissemination of knowledge upon which the Lisbon strategy is built. This activity will also aim at the full integration of women into the scientific world.” [17]

Nevertheless, the integration mode of the science-society relations does not solve the crucial question of how to achieve horizontal mode of interaction. In the overall development of European research policy SiS represents a step forward. This, however, does not diminish the underlying dangers of reducing the idea for integration to top-down approaches in innovation governance (e.g. experts instructing the public, consultation with the public) which will impede the latter to evolve beyond mere communication.

The Seventh FP keeps the link between research and the imperative for economic advancement while opens room for **consideration of possible participatory structures** to better balance knowledge asymmetries, uncertainties and risks so that science could address ethical issues in the light of fundamental rights, avoid undesired consequences of research and make room for the legitimate considerations of the non-scientific public. This represents a serious **governance turn** within the European research discourse in the evolution of the framework programmes with regard to S&T development. The emphasis on governance recognizes on the one hand the societal embeddedness of what is usually perceived as neutral science, and the on the other – the non-neutral effects of its products and achievements. Furthermore, it advocates for the exploration of adequate modes of “societal dialogue” on research policy and the integration of political, ethical and societal considerations in the research process [17]. In other words, it triggers the debate on the governance conditions that would allow participation, societal involvement and ethical scrutiny with regard to the research and innovation process.

“Science **in** society” (SiS) is hoped to bring about or at least stimulate [17]:

- improvement in the use and monitoring the impact of scientific advice and expertise for policy-making (including risk management);
- accessibility of scientific results for the public;
- safeguards against misuse of scientific domains;
- broadening the engagement of researchers and the public at large, including organized civil society, with science-related questions, to anticipate and clarify political and societal issues, including ethical issues;

- reflection and debate on science and technology and their place in society, drawing on disciplines such as history, sociology and philosophy of science and technology;
- gender research, including the integration of the gender dimension in all areas of research and the promotion of the role of women in research and in scientific decision-making bodies;
- creation of an open environment which triggers curiosity for science in children and young people, by reinforcing science education at all levels, including in schools, and promoting interest and full participation in science among young people from all backgrounds;
- improved interrelatedness, communication and mutual understanding between the scientific world and the wider audience of policy-makers, the media and the general public.

The “Science in Society” mode of interaction is different from the traditional approach of seeking one-way communication by translating scientific results for the public to ensure societal uptake: “[t]he dialogue between science and society in Europe should be intensified in order to develop a science and research agenda that meets citizens' concerns, including by fostering critical reflection, and is aimed at reinforcing public confidence in science.” [15] Following from that, the actual governance question is **how** to engage in a joint conversation scientists, policy-makers and the civil society in the formulation of socially acceptable, ethically consistent and economically expedient European RTD policy. Furthermore, amidst the striving for economic revival on the Continent and the unfading crisis discourse from the last 7-8 years, the resulting sense of emergency opens up the possibility for recognizing innovation push (S&T) as the solution of all societal challenges interpreted mainly through the prism of the consequences of the economic crash. There are numerous accounts which connect the post-crisis revival of Europe with boosting innovation [18] [19] [20]. The problem, however, is that the crisis paradigm implicitly requires immediate measures and innovation fixes to address the sluggish economy, thus leaving very restricted room for reflection on the innovation process itself: “[e]xceptional expectations are raised concerning the possible roles for science and technology. A new agenda unfolds concerning ‘how?’ science and technology should be fostered – and ‘how fast?’. But relatively little effort is expended on ‘why?’, ‘in which ways?’ and ‘says who?’” [21].

The recent Horizon 2020 - The Framework Programme for Research and Innovation (2014-2020) [22] makes a step further. Following the provisions of the Europe 2020 strategy as well as the adopted a year before that Lund Declaration (see Appendix 1), the relations between science and society are re-focused towards what is coined as “grand societal challenges” with a strong emphasis on the engagement of the public. The framework for Responsible research and innovation is foreseen to play a major role with that respect. In the wording of the European Commission Responsible Research and Innovation means that “[s]ocietal actors work together during the whole research and innovation process in order to better align both the process and its outcomes, with the values, needs and expectations of European society. RRI is an ambitious challenge for the creation of a Research and Innovation policy driven by the needs of society and engaging all societal actors via inclusive participatory approaches” [23]. For that end RRI is established as a cross-cutting issue in the Horizon 2020. Through it a new mode of interaction between science and society will be promoted by a special stream – the “Science *with and for* Society” (SWAFS) stream.

This section aimed at demonstrating that the emergence and the integration of the RRI framework is part of the overall direction of the EU efforts to elaborate the adequate mode

of governance of the relations between the research community and the general public. The evolution of the European Framework Programmes for research and technological development shows a very important shift in the way the Commission sees the interaction between them – from Public Understanding of Science to Public Engagement in Science. The “Science **and** Society” (FP6) mode of interaction aims at bridging the gap between the two parties by familiarizing the general public with the “esoteric” work of the researchers. The assumption is that better understanding on part of society will promote its trust in the scientific community. That is why better communication of scientific results is seen as crucial in that respect. The “Science **in** Society” (FP7) mode of interaction goes a step further by acknowledging that a meaningful dialogue is not only a matter of educational efforts intended for the general public, but that the concerns of the latter should also be taken into account. It is recognition for the need research and innovation to be “re-socialized”, i.e. aligned with greater societal needs and directed towards societally desirable ends. The “Science **with and for** Society” (Horizon 2020) gets another step further and emphasizes the importance of the actual engagement of societal actors in the research process. The responsibility of researchers is not exhausted with taking into account societal needs (**for** Society) but also suggests creating conditions for **participation (with** Society) through stakeholder involvement, civil society consultations, user-centered design, etc. It must be kept in mind, however, that although the evolution of the Framework Programmes points to the need for a more inclusive way of decision-making with regard to research and innovation, in the attempts for practical realization of this vision there is still a danger of reducing the idea of the engagement of the public in the elaboration of solution to engagement of the public in a communication process (where it could be instructed, consulted or just formally taken into account in a top-down interaction). What is at stake is its actual participation in the taking of decisions on the matter.

As it could be noted, the emergence of RRI is yet another phase of a series of attempts to find the proper governance framework within which a much needed dialogue between science and society could take place. However, as such it introduces the problem of exploring the conditions of creating the adequate governance arrangements that would allow this multi-perspective and multi-level interaction<sup>2</sup> not just to take place but actually to be fertile and effective. Transposed to the ambitions of the RESPONSIBILITY, this means that the project (through the Forum and the Observatory) needs to attempt at creating the conditions to address the science-society issue beyond the miscommunication problem. In this sense neither the Observatory is only a repository for documents, nor is the Forum a simple opinion-gathering mechanism. What are the institutional arrangements, that would allow meaningful multi-stakeholder deliberation (beyond the Habermasian proceduralist solution<sup>3</sup>) which will lead to actual engagement of the various societal actors in constructing

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<sup>2</sup> The idea of multi-stakeholder governance marks a shift in the perceptions about the state with regard to policy-making and regulation - from a domineering entity to one of the partners in a societal dialogue.

<sup>3</sup> Simply put, proceduralist scholarship is concerned with creating the conditions for a valid process (in the context of social and cultural pluralism in contemporary societies) for the construction of rules, decisions or institutions, in which the latter will be justified with reference to the process itself and not to some substantive account on what is morally right, just or good. The Habermasian solution with this respect consist in striving to an ideal speech situation in which participants can discuss and agree on a normative statement on a basis of arguments, expressed freely and without any constraint in order to avoid manipulations and strategic actions. What justifies the normative statement is not

a shared normative horizon, is the crucial question underlying the efforts of the project. And this is a question pertaining to governance. Thus, for RESPONSIBILITY, as a coordination action project which is also concerned with seeking ways to implement the idea of responsible R&I, the utmost challenge is how to translate the promise of RRI (the norm) into concrete context-aware practices (the enactment of the norm and the conditions of its contextual application). More specifically, how to construct and manage the Forum and the Observatory so participants in them not only exchange information and endlessly discuss various emerging technologies and innovation matters but actually engage in the co-construction of solutions in a way that the question of the application of those solutions is addressed in the construction process itself. This probably constitutes the most problematic aspect of innovation governance. In order to further clarify the challenges in front of RESPONSIBILITY in terms of that, the next section of the text will trace the development of the “governance” theme in European policy-making.

### 2.3 The governance turn in European policy-making

This section of the deliverable will focus on some developments with regard to the increasing attention paid to the issue of governance in European policy-making. It will demonstrate how the notion of governance served to justify the need for alternative institutional arrangements for policy-making which aim at overcoming the traditional dominance of expert knowledge by opening the process for the involvement of variety of societal actors. In view of research and innovation governance, this actually means that the mode of interaction between the scientific community and the public can neither be exhausted with science education (communication efforts to “interpret” science in understandable for the public way) nor with consultation (listening to the concerns, fears and comments of the non-scientific community). The normative appeal of governance, as a novel horizontally-oriented approach towards policy-making, is for letting the public in a process of co-construction and joint knowledge-creation.

The various programmatic shifts and search for the most adequate governance framework to realize the science-society relations reflect an underlying confidence that the future of Europe (as a unique political structure and as a global player) is dependent on the reliance on R&D advancement, and that advancement need to be backed by a supportive public and S&T-interested young generation [24, p. 11]. This somehow predetermines the insufficiencies of the European governance approach, which very often confines the rationale of participation to intensive communication efforts, be they for reinsuring the citizens in the benefits of innovation and addressing the “black box” perception of science or towards opening the scientific-technological community to external perspectives (other disciplines, laymen, NGOs, etc.).

In the 1990s, the tremendous development and market realization of new technologies without proper risk-analysis and public regulation in a highly liberalized global economy was recognized as a situation that requires *governance response* to “the undermined public confidence in expert-based policy-making” [25, p. 18]. At the beginning of the 21<sup>st</sup> century those problems were recognized by the European Commission and addressed in a white paper document – European Governance: a White Paper (EGWP), proposing the following direction to be adopted: “The EU’s multi-disciplinary expert system will be opened up to

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its content but the agreement on this consensus-oriented procedure of argumentation that leads to its emergence. See [111]

greater public scrutiny and debate. This is needed to manage the challenges, risks and ethical questions thrown up by science and technology.” [25, p. 33] This was seen as part of the overall process of opening up the policy making process “to get more people and organizations involved in shaping and delivering EU policy”.

Thus the science-society relations became part of the debate on governance and the formulation of the five principles of good governance expected to overcome citizens’ alienation while providing a more democratic solution for “how the EU uses the powers given by its citizens” [25, p. 6]. Those principles are: openness, participation, accountability, effectiveness and coherence. The definition of governance provided by EGWP relies on the integration of those principles in the overall institutional arrangements in the Union: “Governance” means rules, processes and behaviour that affect the way in which powers are exercised at European level, particularly as regards openness, participation, accountability, effectiveness and coherence” [25, p. 6]. Key concept within this understanding is “involvement”:

- of the Union to work more openly and communicate more actively with the general public on European issues;
- involvement of local and regional authorities in policy-formulation;
- involvement of civil society actors, building confidence in expert advice, etc.

The abovementioned elements of governance are conceived within improved processes of consultation thus framing the problem of governance through the problem of building participatory structures that would allow more open policy-making as a form of a dialogue. Of course a persistent problem is the scope and quality of that dialogue, the dangers of restricting it to consultation and the vanishing possibilities of genuine deliberation. The other “promising” component – openness – is understood mainly as better communication with the general public about the work of EU institutions. This restricts the problem of openness to enhancing awareness and informing the citizens through public relations strategies.

The governance turn in framing the European research policy is supported by serious debates on the matter reflected in policy reports elaborated by expert groups problematizing the relationship between science and society. In 2007 within the “Taking European Knowledge Societies Seriously” report, an expert group advocates for a transition from risk-governance to innovation-governance in which “An important change in the governance of innovation would be strategic development of improved European institutional capacity to deliberate and resolve normative questions concerning the prior shaping of science and innovation: over their directions as well as their scale and speed. Put simply, we recommend the introduction of structured ways of appraising the projected benefits of innovation. This means...**a shift from expert-dominated to more open deliberative science-informed institutions on ethics, risk and innovation**” [emphasis added] [26, p. 11]. Global economic imperatives to pursue science-led innovation as quickly and efficiently as possible conflict with the inevitable frictions and demands of democratic governance and the need to address the public’s uneasiness with science. Two years later, in the context of the Lund Declaration and the policy and research shift towards identifying and handling *grand challenges* [27] to turn them into sustainable solutions, the MASIS report deals with finding an adequate model of science and society relations in view of the ongoing process of re-contextualization of the role of science in society [28]. The report notes that “One of the major trends in the field is increased public-private interaction and an increase

in the strategic use of science even within publicly-funded research. The reinforcement of increased interaction among researchers at universities, other government affiliated research institutions, private business and enterprises is a central element in the re-contextualization of science in society. The broader involvement of actors and, consequently, the increased number of stakeholders involved in science has challenged the role of science in society and the traditional academic freedom of researchers. The role of scientists has also changed". One of the great challenges with regard to governance and new public management is how to reconcile liberalization (of the knowledge production process, but not only) and democratization (in policy-making). In the case of S&T and innovation governance, the difficulties in solving this complex matter come from different directions. On the one hand, in European research discourse, the governance problem is linked with an increasing interest in the normative ideals of participatory and deliberative democracy. On the other, form "the good governance" notion with its insistence on principles of openness, participation, accountability, effectiveness and coherence. On the third, there is the push for more technology as a solution for economic and societal problems. In fact, there is no single governance framework, but a patchwork of governance issues, arrangements and attempts to improve the latter. A focus on the combination of self-regulation (incl. internal democratization of science) and external regulation (involving societal actors for more democratic governance) of science is sometimes viewed, as it is evident in the so called MASIS report, as a possible way ahead [28, p. 33]. At the same time "ethics has become a political instrument to normalize innovation and to facilitate change. It has been instantiated and captured through numerous ethics committees that have consequently become privileged places to speak in the name of society. Yet, the new type of ethical expertise being created means that in most cases ethical deliberation is by no means a broader participatory exercise, but rather should be understood as a boundary drawing exercise" [28, p. 38] [29]. The report acknowledged that the issue of true deliberation is at stake in all the formalized attempts to engage the stakeholders. It insists on the notion of dynamic governance, which requires open-ended attitude on governance beyond the usual legal instruments or evolving normative guideline [28, p. 39]. In other words, it touches on the heart of the matter and the realization that true deliberation is not equal to mere communication.

The institutionalization of public engagement was recognized [30, p. 5] as a striving to enrich the public-science interaction beyond just investing in teaching and communicating science in a situation of new planetary challenges where the interaction between scientists and non-scientists need to empower the public, ensure the researchers and encourage new innovation dynamics. This marks the already mentioned shift from **Public understanding of science (PUS) to Public engagement in science (PES)** in considering democratic governance approaches to research. The rationale of this transition is sought in evidence that the involvement of civil society groups and the wider public could improve social intelligence and stimulate novel directions for innovation. For example, the participation of patient organizations in research about rare diseases turns out to be very beneficial and helpful. Thus, participation and input from societal actors might give new innovation dynamics and be more societally oriented, which would contribute for greater trust in science and social acceptance of new technologies. It is acknowledged that besides the formal participatory structures of involvement (e.g. citizens juries, focus groups, etc.) there is a need for encouraging the scientific community itself to be more reflexive with regard to the social and ethical dimensions of their work beyond the restricted view on human progress as merely a technological evolution, and the rigorous codes, values and norms that govern

scientific practice [30, p. 10]. How to reconcile the ethical imperative<sup>4</sup> and the competitiveness imperative in the global innovation networks represents a governance dilemma the EU needs to address. Another tension that needs to be paid attention in the search for adequate modes of governance is that between the push for evidence-based policy and the push for public involvement (local knowledge, lay knowledge or lay expertise). How to approach the deficit model of PUS (Public understanding of science) where there was “a flawed understanding of science, a flawed understanding of the public, and a *flawed understanding of understanding*.” [30, p. 16]. The need for upstream engagement is recognized but the particularities about its implementation are still fuzzy. A posing danger is narrowing the space for a meaningful debate and impeding the problematization of deeper questions about the values, visions, and vested interests that motivate scientific endeavour [30, p. 17]. Another danger is the misunderstanding of engagement only as a way to give the floor to diverse perspectives on the impact of certain technology without the opportunity for shaping the trajectory of technology development. The case with GMO is instructive in this respect.

As was demonstrated in the overview of the evolution of the framework programmes initially the emphasis was put on industry participation towards the aim of bringing innovation dynamics into the market by RTD. Nevertheless, a broader understanding about the integration of outsiders’ perspectives into the research process has been developed and legitimized in time (as Horizon 2020 shows). The need for a multi-stakeholder approach in dealing with R&I matters is also implied in RESPONSIBILITY and in the construction of the Forum and the Observatory where different type of societal actors could engage in. But the main challenge for the project, as has already been pointed out, is how to ensure that a real participatory and deliberative process will take place. With regard to that we face two main difficulties. First, the availability of a participatory structure which is supposed to establish the dialogue between the concerned parties is not a guarantee that participation will take place. Very often what is planned to be a participatory forum can turn into a venue for instruction (by experts), pressure (by interest group representatives), public policy legitimization (by authorities) or venting (by indignant citizens). Second, a very important question is the existing tension between participation and deliberation. And this is a rather sensitive issue, since it concerns the practical difficulty of engaging multiple perspectives, value orientations and cognitive framings in a meaningful interaction, in a deliberative co-construction of a norm which will also address the conditions of its enactment in reality. Put simply, striving to ensure wider participation and engage as many perspectives as possible can lead to a procedural deadlock manifested in miscommunication, hostility or even conflict. Given that, RESPONSIBILITY faces a double challenge: first, to ensure that the tension participation/deliberation is addressed in the construction and performance of the Forum and the Observatory; second, to provide room for the engaged in the Forum and the Observatory societal actors to address the tension participation/deliberation (through the governance issue) themselves.

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<sup>4</sup> When we mention the ethical imperative in the context of the governance problem it would be useful to remind an element of Ricoeur’s interpretation on the importance of the ethical imperative – the good life, life fulfilled and guided by purpose – that is manifested *with and for* others. Thus, ethical aims are achieved not in solitude but in a relationship with the other. See [112, pp. 172-194]. Transposed to the searches of this text, it also hints that the ethical governance of S&T requires engagement *with and for* the public.

In order to address these difficulties and allow a multi-stakeholder dialogue in RESPONSIBILITY, we need to pay a closer attention to some of the problems surrounding the science-society dialogue. For that end, the next section will explore not only the mistrust between the scientific community and the general public but also the positioning of the political realm with regard to the existing tensions.

## 2.4 Science vs. Society?

This section is devoted to some of the pressing issues which lay at the heart of all the described developments in the previous sections. The aim is not to provide an exhaustive explanation of the manifested mistrust between the scientific field, the citizens and the policy-making world. Rather, it is to identify some high-strung points, which need to be taken into account when reconsidering the relations between those three main groups of stakeholders in the governance of research and innovation. This is especially useful for the RESPONSIBILITY project with regard to its aim to construct a space where this reconsidered mode of interaction will actually take place.

The impetus to address responsibility in research and innovation is generated amidst renovated debates about the crisis of the idea of progress and the spreading perception that the process of technological development exhausts the notion of human evolution. The concerns that highly positivist attitudes in science leave aside moral and ethical considerations while limiting the meaning and significance of science only to the instrumentality of the created knowledge<sup>5</sup> are not new. However, with the help of the responsibility narrative with regard to research and innovation they are put in the focus of institutional attention on the growing mistrust between the public and the scientific community.

The broken trust between the two realms has several sources. On the one hand, there are the traditional public fears because of the growing potency of science and technology to alter the human condition, rearrange natural processes (in the extreme case) or cause harmful unintended consequences through the products it generates and the processes it initiates. Instances of such concerns vary – from the military field (space technologies, new weapons of mass destruction, robotized warfare, etc.) through genetic engineering (creating resistible strains of deadly viruses, cross-genetic species, human enhancement, etc.) to taming of natural processes (nuclear energy, weather modification, exploitation of celestial bodies, etc.). Innovation is more and more perceived as a generator of social change. It could introduce discontinuities and might very likely produce blind risks with global impact, which are very often unequally and unjustly born by those who have nothing to do with the knowledge-creation process [31]. Following that, the topicality of the problem of responsibility re-emerges as a response to the increasing “organized irresponsibility”<sup>6</sup> which comes as an effect of a highly complex innovation ecosystem. Its relevance is also justified in the necessary efforts to cope with insufficiencies in existing policies which fail to approach ethically problematic areas of research and innovation such as geoengineering, GMO, synthetic biology, etc. Second source of mistrust on part of the public is related to the growing commercialization of the knowledge-creation process. Not long ago voices in the

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<sup>5</sup> See [113].

<sup>6</sup> The expression appears as a subtitle of Ulrich Beck’s book *Gegengifte* (translated as “Counter-poison”). See [126]

academia [32] warned about the increasing and devastating influence of corporations in the universities and the danger that education might lose its public good status. The worries are usually connected with the financial dependence on private sector grants and funding schemes which might not only be straying knowledge away from the public interest, but also become the means to steer the knowledge-creation process towards legitimizing particular political or economic interests (e.g. private think-tanks with growing influence on policy-making). The pharmaceutical, the tobacco and the oil industry have turned into exemplary cases with this respect in the perceptions of the public. The image of the objective, independent, truth-seeking researcher is put into question in the perceptions of the public. Another narrative on the misalignment between science and society and the need for innovation to be responsive to societal needs and problems, has more “social inequality” orientation. It depicts various technological advancements as helping existing exploitation mechanisms within contemporary market societies [33, pp. 91-112]. For example, innovation in robotics and automation could be used to deploy novel technologies to transform manufacturing. It would speed up the economic process and the profit-generation but simultaneously generate various severe societal implications, such as laid-off workforce and unemployment in the low-paid sectors of society [34]. In this case, the notion of the emancipatory power of science is put into question.

It must be pointed out, that although in the discourse of European institutions the problem of trust is interpreted mainly as one pertaining to the hostile attitudes of the public, it is more a matter of mutual discredit. Pressing issue in the depicted situation is the resentment on part of the scientific community to the unscientific public. It has manifested in various directions and could be generalized in the discourse of “science under attack”<sup>7</sup>. The latter perceives threats to scientific enquiry and academic freedom to be both the general public’s ignorance and the spreading political misunderstanding (leading to either precautionary measures or to outright political pressure). Relying on the supremacy of codified knowledge, the scientific community seems reluctant to recognize the legitimacy of local knowledge or everyday experiences as a source of knowledge, i.e. to admit the general public as a co-creator of knowledge. This is explicable having in mind the strict rules and requirements of “hard science” knowledge-generation. In such cases the interaction with various societal actors in the research process under the slogan of “participation” will reproduce an instruction or consultation mode (both imply top-down transmission of expert knowledge, far from genuine deliberation). But the described worries also refer to the political realm as not open enough for the research results that have already been produced.

There is also frustration fed by the existing tension between the demand for “evidence-based policy” and the limited access to policy-making mechanisms, and by the fact that sometimes freedom of research is restricted by political pressure [35]. Although key European documents claim that freedom of research is crucial (see the Charter of Fundamental Rights of the European Union, Art.13, Appendix 2), S&T development is still perceived mainly instrumentally as providing the necessary innovation input for meeting

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<sup>7</sup> After the controversial documentary by Sir Paul Nurse, a Nobel-winning geneticist and president of the Royal Society. See [114]

what the policy-making world has defined as a grand Union goals (ex. in The Lisbon strategy, the Europe 2020 strategy). It seems to be the case even for sectorial policies<sup>8</sup>.

In sum, the scientific community has its concerns not only in view of what they perceive to be an ignorant general public, but also with regard to the danger of being instrumentalized by the political realm and be misused for advancing certain political agendas, or legitimize unpopular policies. Therefore, a very important aspect of addressing the challenges of creating a framework for a genuine and efficient interaction is the policy-making world. Restricting the problem of innovation governance to “science vs. the general public” under the supervision of the political realm poses a danger. Leaving the political realm aside as a “conductor” of this very important dialogue hides the risk of never making the transition from government (implies command and control top down mechanisms) to governance (implies horizontal institutional arrangements) as two very distinct modes of societal arrangements with regard to innovation. Hence, it poses a peril for democracy and the quest for a more democratic policy-construction process. As a result, public discontent could be transferred to the scientific community while the political realm is trying to alleviate the problem of the democratic deficit and the increasing detachment of the general electorate of the Union.

The notion of Responsible research and innovation emerged in the beginning of the second decade of this century as framework that could accommodate the concerns of various societal actors and provide a conceptual ground for reconsideration of their relations. It opens possibilities for interdisciplinary (between different epistemic perspectives, trans-disciplinary (between the expert knowledge and local/laymen/tacit knowledge), and multi-stakeholder (between different societal agents) interactions and advance prospective notion of responsibility.

This is especially relevant for the RESPONSIBILITY project. Its goals go hand in hand with all the above-mentioned concerns for the science-society interaction and represent a concrete attempt to address the problem of governance with regard to the implementation of the concept of RRI. Thus the concept behind RESPONSIBILITY fits the intellectual context and is a product of all the programmatic shifts and developments in the European research policy field. It aims not only to contribute to bridging the communication gap between the two realms. It puts focus on the necessary efforts to restore and enrich the interaction between the research and the policy realms by promoting more visibility of scientific results and achievements so they could be incorporated in the decision-making process. Nevertheless, the real challenge for RESPONSIBILITY goes beyond that. It is not in constructing an electronic medium (by means of the Forum and Observatory) to reproduce the usual consultation mode of interaction. Behind the idea of the “network of networks” approach, outlined in Del.2.1, is not the attempt to construct a communication space for involved stakeholders in the science-society debate, but one where participation goes beyond the usual exchange of information – i.e. one which encourages deliberation so the process of reflexive governance of RRI could be initiated. That is why a recurrent theme in this deliverable is and will be the problematization of the participation – deliberation axis in existing modes of governance of the relations between science and society, including in the

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<sup>8</sup> An example for that is the reliance on technology and innovation for the implementation of the Smart Border Initiative in the realm of border security and control in the EU (see [115]).

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concept of RRI, in view of the construction of both the Forum and Observatory for international RRI coordination within the project.

The next chapter will be devoted to the theoretical developments with regard to the notion of RRI and will focus on their problems as well as on some of the major challenges in view of its practical realization. It will demonstrate that addressing the RRI implementation issue cannot be done without resorting to the notion of governance.

### 3 RRI: Theoretical Developments

This chapter will focus on the theoretical developments with regard to the notion of RRI. First, it will provide an account on the emergence of the RRI discourse as a response to certain considerations about the consequences of “disinterested” scientific and technological development. Then it will go through some major themes in the existing RRI conceptualizations and comment on their advantages and disadvantages and specific problems they raise. The final section is devoted to the challenges before RRI implementation. This is very important for RESPONSIBILITY since it provides the theoretical basis to step on and further develop through the Observatory and the Forum. And what is more, the overview which follows justifies the role of the project as a procedural response to the lack of conceptualizations on the conditions of the implementation of RRI in the existing RRI accounts. However, RESPONSIBILITY is not only an “RRI implementation experiment” announced as a coordination effort. It creates a virtual space where through the Forum and the Observatory the thorny issue of RRI implementation could be addressed in a proceduralist manner itself (in a way to subject proceduralist solutions to proceduralist scrutiny).

#### 3.1 The emergence of the notion of RRI

As the previous chapter demonstrated, all the discussions on the science-society dialogue assume a pre-existing disjunction of those two realms: the scientific and the societal. This initial presupposition is at the heart of two main perceptions when considering innovation as problematic: it is either regarded as an independent force/process which needs to be tamed, “socialized” and steered towards publicly desirable ends, or it is seen as inevitably embedded in society and as such entangled in very complex socio-technical systems where contributes for the overall increase in uncertainty. Thus all the worries about innovation and innovation governance stem from a framing which puts emphasis on the problematic interaction of the research realm with the public, which in its turn raises a series of questions which also precipitated the emergence of the notion of Responsible research and innovation. For example, if the innovation process develops while disregarding societal needs and concerns, what would be the consequences? What is the underlying danger if S&T advancement is detached from human and societal development? What could be the social cost of science guided only by “disinterested” research enquiry? What would be the effects of adhering only to the economic normative appeals of market competition and profit-maximization?

The RRI discourse appeared and started to gain appeal in the midst worries about the complexity of the innovation process and its global and profound effects in contemporary society, concerns how could emerging technologies be managed or at least steered towards the “right impacts”, how to switch from linear models of science and innovation policy and go beyond the risk-based regulation of innovation [36, p. 752]. The need to think about “more responsible” research and innovation in a world of uncertainty and ignorance (lack of knowledge reliable enough to ensure the necessary degree of predictability of the future) seemed intuitively right. On a policy-making level the need to define RRI was also recognized. In the words of Octavi Quintana, the director of ERA: “After several years of research on the relation between science and society, we evidenced that we need to involve civil society very upstream to avoid misunderstanding and difficulties afterwards. ***We need to discuss science related societal changes with society. We cannot guarantee the social acceptability for anything*** but the more we have dialogue the easier it is to understand the

potential obstacles and to work on them”(May 2011)[emphasis added] [37]. It needs to be pinpointed, however, that there is a danger of reducing the question of the acceptability to one of acceptance. The first source of such a risk comes from adhering only to the economic framing in the justification of innovation. The second one is leaving aside the question of **acceptability** altogether and boil it down to efforts to promote public **acceptance** (staying on the level of communication and public understanding of science)<sup>9</sup>.

Later that same month, an international workshop on ‘Responsible Innovation’ was held at the French Embassy in London. A representative of the EC, although expressing his views in personal quality, found the rationale for RRI in three main considerations:

1. Significant time lag between technical discovery and market product;
2. Societal perception and impacts of technology difficult (impossible) to predict;
3. Early societal intervention may enable anticipation of positive and negative impacts [38].

A European institutional commitment with the notion of RRI was witnessed only after 2012. A high level EC support for the concept was given firstly by EU Commissioner Máire Geoghegan-Quinn in April 2012 at a conference called “Science in Dialogue” in which she stated the need to make research responsible by aligning it with the concerns and values of society in a continuous dialogue with stakeholders **within** the research and innovation process: “After ten years of action at EU level to develop and promote the role of science in society, at least one thing is very clear: we can only find the right answers to the challenges we face by **involving** as many stakeholders as possible in the research and innovation process. Research and innovation must respond to the needs and ambitions of society, reflect its values, and be responsible” [39]. She defined six “keys” (see section 5.1), six directions for implementing RRI, which would be supported by Horizon 2020 and would highlight responsible research and societal engagement throughout the programme.

The political statement of the need for RRI cannot compensate for the lack of definition. Although the institutional rationality of the Commission provides operationalization of the elements of the implementation effort to advance a particular understanding for “more responsible” research practices, it must be recognized that the six keys alone (public engagement, open science, gender equality, science education, ethics and governance) as instructions for application are not sufficient for ensuring the conceptual sustainability of RRI. Still, the initial lack of definition stimulated ideas on how to make R&I “more

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<sup>9</sup> There is a fundamental distinction between **acceptance and acceptability** as two different modes of addressing the problem of the public’s uptake of innovation. Put simply, acceptance refers to cases when users are presented with a novel technology or innovation product without proper discussion on its nature, desirability or ethical acceptability. In such instances innovation’s promoters believe that it is enough to guarantee that their product is not in conflict with law regulations and that the public’s uptake is a matter of better communication efforts (more information, awareness campaigns, advertising, etc.). The case with the marketization of genetically modified organisms (GMO) is a textbook example in this respect. The ongoing public reaction against this biotechnology products is due to the fact that the question of the acceptability (which pertains to questions about the meaning and the place of such technology in society not only in terms of the ethical issues it raises but also with regard to what visions for society it promotes to unfold in the future) was not addressed in advance. That is why the public perceives GMO as imposed maleficent technology advanced by moneyed interests.

responsible” by relying on suggestions for contra-experience of “irresponsible innovation”<sup>10</sup> by “aligning” the innovation agenda with societal needs.

Nevertheless, there is a persistent problem with regard to the implementation conditions for RRI, especially in view of ensuring meaningful public engagement. This is a serious questions and goes beyond the efforts to “socialize” S&T and overcome the traditional perception of scientific knowledge as independent and neutral to the broader social and axiological context), or to “re-contextualize” it in society. It is not even about the “Public understanding of science” goal of achieving research-literate public. It concerns the governance arrangements that would create the conditions for a genuine interaction between societal actors which will open the possibility for collective action beyond the traditional consultation/instruction. And this introduces various difficulties with regard to what are the conditions for innovation governance in a situation of “multiplicity of the sources of normativity in modern societies” [40, p. 52] , which actually touches upon the question of what would be the mode of societal arrangements that would allow actual deliberation in highly complex and functionally differentiated societies. We inhabit a world in which it is supposed that every sphere is normatively independent and is being guided by its own internal principles and sources of normativity<sup>11</sup>. As a result of that ethics is perceived as a realm-specific consideration of applied ethics. We have an ever expanding field of various professional and sectorial ethics such as medical ethics, environmental ethics, business ethics, media ethics, political ethics, scientific ethics, etc. Therefore, the problem for innovation governance is **what would be the source of normativity** beyond the traditional command-control structures in the dialogue between the concerned parties (researchers, citizens, policy makers, business, third sector organizations, etc.). In the theory of democratic governance this difficulty is addressed by conceptualizations on the necessary procedural conditions which could realize the promises of the democratic ideal. With regard to RRI, we cannot approach the problem of its implementation without referring to proceduralist concerns. The emergence and the evolution of proceduralist scholarship is telling for a deep concern about the possibility of collective action in contemporary industrialized societies and the legitimacy of democratic regimes in view of the issue of normative pluralism. Be it in discursive ethics (Habermas) or political counterfactual constructions (Rawls), the proceduralist mind is preoccupied with finding the governance arrangements would allow not only legitimate collective decision to take place (creating a norm), but the actual adherence of the involved actors to it (to address the conditions of the application of the norm in the construction of the norm).

Given that, the main problematic issue (also pertaining to the aims of RESPONSIBILITY) concerning the implementation of RRI is how to approach the tension between participation and deliberation in the proposed modes of interaction so that the stakeholders could engage in a meaningful horizontal dialogue on the governance of research and innovation. Furthermore, it concerns not only the procedural conditions that would give participatory

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<sup>10</sup> Examples of irresponsible innovation can be found in cases where societal needs, considerations or values have not been taken into account in the design or the implementation of innovation products or processes. Such instance is the Dutch Electronic Patient Record System, in whose elaboration privacy concerns were not paid due attention on time, which led to halt and additional efforts and funding to change it so it the respect for privacy to be built-in its operation [116].

<sup>11</sup> Something, which Daniel Bell called “the disjunction of realms” around their own axial principles (see [117]).

value of their dialogue or guarantee the success of the deliberation process they are involved in. It also concerns the question of ensuring their actual commitment with the decisions and norms they themselves elaborate.

In order to provide a clearer picture on the RRI implementation problem, the next section will summarize some major themes in the existing accounts and will identify not only their achievements but also the difficulties they imply in view of the governance of innovation.

## 3.2 Themes in the RRI theoretical landscape

### 3.2.1 Some preliminary remarks

Before going into details with the various RRI accounts there are some preliminary remarks that need to be made. First, RRI is still an evolving notion and those who are concerned with its conceptual sustainability are also concerned with elaborating the mechanisms for its introduction into actual governance practices. One of the pressing problems with that respect is the implementation issue. How could the normative appeal of RRI become preserved into practice? What could be the institutional arrangements that would allow participation, deliberation, reflexivity, anticipation, transparency be implied in the governance of innovation? How could meaningful responsible research and innovation governance be ensured? Second, given all those problems and the variety of approaches in view of steering innovation towards more ethically acceptable and societally desirable ends, many of the accounts on the meaning and significance of RRI were *collectively* conceived. RRI was recognized as an umbrella notion that could accommodate all those concerns as a new innovation policy approach. Third, it must also be noted that in some of those accounts the employed expression is “responsible innovation” (Owen et al., Van den Hoven, Stilgoe et al.) instead of “responsible research and innovation” (Von Schomberg). The point of interest is the innovation cycle and how that could be influenced and directed in a more “responsible” direction. The focus is on all the products and processes of innovation as embedded in society, as mundane societal realization of research. At the same time research, and responsible research in particular, is implied as inseparable part of that innovation cycle.

### 3.2.2 RRI as novel innovation governance approach

In a paper on the emergence of RRI as a novel policy approach of governing science and innovation Owen et al. [36] elicited three features of RRI within the evolving discourse on the subject. RRI could be considered an innovation in governance of R&I itself with reference to:

- democratizing of the governance of intent (science for society);
- institutionalizing responsiveness (science with society);
- reframing responsibility.

The three generalized features of RRI have been further elaborated under the rationale of this novel innovation governance approach and summarized later as “the Imperative for Responsible Innovation” (Owen et al. [41]). In examining the context and the impetus behind this new striving for science and innovation to be undertaken responsibly, they have outlined four important problems [41, pp. 30-35] :

1. the social contract for science and innovation;
2. the responsibility gap;

3. the dilemma of control;
4. products and purposes.

These reflect significant deficits in the current governance of science and innovation and the need the latter to be addressed within the novel framework of RRI.

The first difficulty requires the deep realization of the interconnectedness and mutual impact between science and society and entails efforts for reconsideration of the social contract in view of the highly transformative power of S&T, the production of unintended and unforeseen impacts, the public value of S&T, etc. This is what stands behind the idea of RRI as a new governance mode for research and innovation as deeper engagement with public concerns, societal challenges, ethical values and norms in order to go beyond the perceived functional and normative independence of the research field.

The second difficulty requires revision of the relevance of the notion of responsibility to the governance of innovation in the following respects: temporality of regulation, prevention measures (precaution, safety regulations, and quality standards), and liability regimes. They all entail responsibility in legal terms, which in the context of “out-of-sync” dynamics between innovation, its impacts and consequences and the policies to govern it seems to require reconsideration of the mere notion of responsibility in such complex ecosystems of innovation, where neither risk nor accountability are easy to be foreseen and traced.

The third difficulty stems from an observation of David Collingridge that by the time we obtain relevant knowledge on the impact of certain innovations, they will be “locked in” society so that any chances for control are diminishing (its costly, vested interests might oppose). One possible way to manage this is not to address it at all and take a decisionist approach to morality. Another is the early integration of ethical, legal, societal consideration in the innovation process, and be entangled in the design of the products and processes. This leads us to the next problem, namely addressing not only the innovation products but the organization of the innovation project itself, to put into consideration its motivations, its purposes in a more constructive way - not only depicting the dangers, but opening new horizons for shaping the future, the values we want to anchor in it, to realize new areas of public value for innovation [42]. This cannot be done without reconsideration of the notion of responsibility.

### 3.2.3 Temporal aspects of RRI

What is significant in the reconsideration of responsibility in view of science and innovation is the temporal reverse of the problem by what some propose as prospective responsibility [41]. In contradistinction to the legally-oriented negative notion of responsibility (see p.22), which accentuates on the post-factum assigning of fault/guilt and the calculation of compensation (to be *held* responsible for past deeds), the positive notion of responsibility, advanced by RRI, has more proactive character (to *take* responsibility for future acts). It allows for reflection of purposes, i.e. it goes beyond the consequentialist considerations in view of S&T impact, and represents a temporally revised notion of responsibility, one directed towards questions on the future and how could innovation help in shaping it towards desired directions. This prospective responsibility in research and innovation has two very important dimensions. The first one is responsiveness not only as an adaptation reflex in view of the changing information environment, but also as consideration of the other – their views, perspectives, framings, etc. Owen et al. [41, p. 29] place deliberation as a dimension of responsiveness for engagement of the public and stakeholders that would

help not only mutual understanding (consultation) but the forming new agendas for science and innovation. In other words, **responsiveness** is seen not only in reflecting the dynamics of the context for a better knowledge-generation process but as opening the possibility for intervention from various actors towards a plurality of development paths. The second feature of prospective responsibility is **care**. Care is a very important aspect in a situation of functionally and normatively fragmented societies, uncertainty, blind risks, and unintended consequences because it compensates for the ethical insufficiencies due to impaired consequentialist visibility. Going beyond the normative closure of specific fields (reflected in sectorial or professional ethics) and recognizing the relevance of the other, is at the heart of responsibility as care.

Those two dimensions of responsibility actually open the way to conceptualize the prospects of **collective responsibility** in contradistinction to the legal notion of responsibility (based on the individual's blame, fault or guilt which evoke judicial accountability mechanisms). Thus

“Responsible innovation is a **collective commitment** of care for the future through responsive stewardship of science and innovation in the present.” [41, p. 36]

This definition makes a step further in conceptualizing the governance of innovation with its insistence on engagement, beyond usual consultation mechanisms, as a specific occupation with the future (not as projecting trends and navigating into uncertainty but as actual co-creation of the context). Translated in the language of proceduralist scholarship, the idea of RRI concerns the conditions for *collective action* in research governance.

Except for the prospective orientation of responsibility through anticipation or foresight element of the engagement with the future, the notion of care has very important implications in view of the temporal aspects of R&I governance. Care, except for taking into account the other and the future in a proactive engagement with the governance of S&T, implies a different temporality regime of the regulation of what is usually construed as problematic innovation.

Stepping on the findings of Collingridge [43] and the impossibility to control due to inevitable ignorance and incapability to foresee or project all the eventual consequences of the deployment of a technology, and what is more the narrow room for corrective actions afterward, Stilgoe [44] advocates for a novel mode of innovation governance which he calls collective experimentation. He steps on the understanding that control is impossible, but care-fullness is and it could be realized by timely problematization of a technology, one which through recognition of the social experimentation nature of emerging technology, would allow for knowns and unknowns to be renegotiated in public discourse and in research projects. The rationale behind such a move is the need to temporally adjust the innovation governance impetus by avoiding the usual naturalization of emerging technologies. The latter misleads all attempts to align innovation with ethical and societal concerns and presents opportunities only for post-factum regulatory efforts and ethical assessments *as if* the technology is already embedded in society. In contradistinction to that, pre-emptive problematizing of emerging technologies can serve as social experimentation, as a site for political contestation, of reimagining the uncertainties and stakes, for new constructive insights on their further governance.

But all this pertains to a question which in one way or another is implied in the variety of RRI accounts, namely, “How to innovate responsibly?”.

### 3.2.4 How to innovate responsibly?

Very often RRI is understood in terms of adopting the necessary measures “to innovate responsibly”. Within the mode of continuity and collective commitment, innovating responsibly entails the following key elements:

1. anticipation;
2. reflection;
3. deliberation;
4. responsiveness.

The measures to ensure responsible innovation include some foresight approaches in order to anticipate plausible, probable and desirable pathways of unfolding the future, to identify hidden threats, weak signals and emerging opportunities to shape it, to raise questions about purposes, impacts, meanings of certain S&T developments. To innovate responsibly also means to create a critical distance and reflect on underlying purposes, motivations, on the known and the unknown, on uncertainties, areas of ignorance, assumptions, questions and dilemmas. Furthermore, it entails *opening up* for various perspectives and possible reframing of problems in view of the interaction with the public and diverse stakeholders (collective deliberation). Last but not least, a collective process of reflexivity needs to be set in motion by mechanisms of participatory governance which needs to be inclusive, iterative and open process of adaptive learning.

This normative vision of what RRI in one way or another reflects all the concerns expressed in the theory of governance and the institutional responses to those problems, implied in milestone words like “participation”, “deliberation”, inclusive approach, anticipatory governance. On the other hand this focus on “how to innovate responsibly” is at the heart of the usual approach of defining RRI in view of how to make innovation more responsible and creates the risk of compartmentalization of the problem of ethics within the RRI notion. What is more, there is some tension between the insistence for collective responsibility and the implicit assumption that the burden towards making “responsible” innovation is on the innovators to open themselves (projecting the notion of individual responsibility to take into account the other and the future as a horizon).

In a similar generalized account for building a framework for RRI Stilgoe et al. [45], the notion for prospective view of responsibility is affirmed and the four dimensions of responsible innovation are as follow: anticipation, reflexivity, inclusion and responsiveness. It must be noted that reflexivity in contradistinction to reflection requires a deeper level of rethinking and reconsideration of prevailing conceptions held by the actors. Reflexivity, according to the authors, implies challenging dominant assumptions about “scientific amorality and agnosticism” and blurs the distinction between their role responsibilities and wider moral responsibilities [45, p. 1571]. This is a very important point since it re-introduces the relevance of ethics with regard to the research and innovation process. Still, it sees ethics not as a process of enabling context-aware moral thinking but as a restoration of the relevance of the bridging of normative and applied ethics. Another difference in defining the crucial aspects of RRI is involvement. In the account of Owen et al. the focus is on the need the responsible commitment with innovation to be deliberative. Stilgoe et al. use the term involvement to be able to encompass the variety of forms in which the governance of science and innovation has let various voices to be heard. They depict all those attempts for public engagement, notwithstanding their intensity, openness or quality, not as constituting a new governance paradigm but more like an ongoing process of experimentation or a

symptom of changes in government mixing old and new governance assumptions [45, p. 1572].

All this directs our attention on the characteristics of the **processes** that would create the conditions for *responsible* research and innovation.

### 3.2.5 RRI: products *and* processes

The interest of how responsibility could be made relevant, not only for the products of innovation but for the processes of innovation governance, is reflected in one of the most popular definitions on RRI, that of Rene von Schomberg. What is significant about this particular definition is that it directs the attention on the specifics of the *process* of research and innovation and not only on its outcomes and marketable products. It states:

“Responsible research and Innovation is a transparent, interactive **process** by which societal actors and innovators become mutually responsive to each other with a view on the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society)” [emphasis added] [46, p. 63].

This definition of RRI reflects some very important concerns in the governance process of R&I and the way they need to be addressed. A transparent and interactive process of interaction between the innovation community and various societal actors is quite in line with all governance theories in view of promoting the flow of information and feedback mechanisms for a fully-fledged knowledge-creation process in elaborating innovation policies. Thus the notion of responsibility comes here to denote concerns over the mere process and its ability to provide the necessary conditions for better integrating of innovation products and processes into societal life.

The concern here is that those two realms need reconciliation, that the potential of the innovation field cannot be fully exploited unless conditions for mutual responsiveness are enacted so to come to a mutual understanding on the (ethical) acceptability, sustainability and societal desirability of its marketable products. In view of the difficulties which the defining the specifics or the interrelation between the three (acceptability, sustainability and desirability), he later harbours on linking those with fundamental values of EU enshrined in the legal normative framework of the Union (e.g. Charter of Fundamental Rights of the European Union – see Appendix 2). Recognizing the difficulty in defining “the right impacts” of R&I due to the myriad of visions on “the good life”, Schomberg resorts to what has already been agreed to be shared European values as normative anchor points for innovation governance. Those were later complemented with what was later coined as “grand challenges” with the Lund Declaration of 2009. Thus he found a crossing point with the European institutional landscape for introducing the need of RRI in connection with that same landscape.

The connection between the notions of right impacts and grand challenges is somehow embedded in concerns about the stability of the future in a world of untamed market-driven innovation, blind risks and unintended consequences. That is why, it is not a surprise that, as the next subsection shows, some of the RRI accounts lean on the notion of sustainability.

### 3.2.6 RRI: towards sustainability interpretation

At the beginning of the second decade of the 21<sup>st</sup> century a primary characteristic is the definitional deficiency of RRI and the lack of clarity in view of its implementation. The European commission is supportive in the attempts to come up with an agreed notion which would give directions for the European institutions to follow. That is why workshops and seminars are being organized at that time with the aim to come with more consistent understanding between researchers. Sutcliffe in her report on RRI (2011) summarizes various accounts on RRI to elicit some general features [47, p. 3]:

1. The **deliberate** focus of research and the products of innovation to achieve a **social or environmental benefit**.
2. The consistent, **ongoing involvement of society**, from beginning to end of the innovation process, including the public & non-governmental groups, who are themselves **mindful of the public good**.
3. Assessing and effectively prioritizing **social, ethical and environmental impacts**, risks and opportunities, both now and in the future, alongside the technical and commercial.
4. Where **oversight mechanisms** are better able to anticipate and manage problems and opportunities and which are also **able to adapt and respond quickly to changing knowledge** and circumstances.
5. Where **openness and transparency** are an integral component of the research and innovation process [emphasis added].

These five characteristics reflect some of the already mentioned concerns with regard to the governance of innovation. The first one being what would Owen et al. [41] later call “stewardship” of innovation. The deliberate focus on societal benefit, eliciting perspectives mindful of the public good and ongoing involvement of the public throughout the innovation process are reminders of the emerging need to steer S&T back towards society, to re-contextualize them, to “socialize” them even by bridging the distance between research and the public not only on the level of perspectives but on the temporal aspects of that engagement (give example). Adaptability, reactivity to changing knowledge, openness and transparency on the other hand are in line with governance concerns informed by system theory, cybernetics and neo- institutionalism. What is interesting and different here is the emphasis on intent (the word “deliberate”) through *which a connection with broader societal goals is being re-introduced*.

And this emphasis on the connection between research and the public through the issue of applications of research (not research itself) is at the heart of her later insistence on discussing responsible innovation (RI) not RRI, since the innovation process (not research alone) is a point of encounter with the public.

She still adheres to the abovementioned five principles as components of RI but proposes another definition for discussion implying the primacy of problem of sustainability in innovation governance (by adapting the Brundtland definition of sustainable development from 1987). It reads:

“Responsible innovation is innovation that helps fulfil our needs and hopes without compromising the ability of others, now and in the future, to fulfil their own” [48].

Responsibility here is understood as being mindful of intergenerational justice issues, as well as of the thorny question of the unequal/unfair burden of the consequences of innovation.

On the other hand, it is put as crucial for human development and steering innovation towards desired futures. On the third, probably unintentionally, it presupposes current development divides but (to fulfil our needs without compromising the ability of others) but within the limits of the admissible (like in Pareto's efficiency<sup>12</sup> or the usual liberal discourse).

The accent on needs and hopes, now and in the future, leads as to another account which is occupied with the potential of the images of tomorrow in reconsidering our shared now.

### 3.2.7 A hermeneutic turn in RRI

Armin Grunwald recognizes that RRI is a new umbrella term trying to embrace all the moral, epistemic and governance problems being previously addressed by applied ethics, Technology Assessment, science and technology studies by:

- involving ethical and social issues more directly in the innovation process by integrative approaches to development and innovation;
- bridging the gap between innovation practice, engineering ethics, technology assessment, governance research and social sciences (STS);
- giving new shape to innovation processes and to technology governance according to responsibility reflections in all of its three dimensions mentioned above;
- in particular, making the distribution of responsibility among the involved actors as transparent as possible;
- supporting "constructive paths" of the co-evolution of technology and the regulative frameworks of society [49, p. 26].

He recognizes the gaps and deficiencies in the accounts on RRI and later focuses particularly on the concept of responsibility since most the RRI explanations take it as a self-explanatory or imply its realization through improving the innovation process by participation. He proposes a "hermeneutic turn" to the ongoing RRI debates. He insists on the recognition that except for ethical the notion of responsibility has also empirical and epistemic dimensions which require due attention. He establishes the need to think about responsibility beyond consequentialism (which is typical for TA with its early warning mechanisms) and proposes a hermeneutic mode of orientation towards future developments<sup>13</sup> which entails that instead of trying to get better knowledge of future development the change of perspective consists of raising the question what could be learned by analysing the visionary narratives about the contemporary situation.

Here the focus is not on exploring the context, getting better knowledge to ensure greater visibility on the future but to examine the existing visions for the future in order to initiate a conversation about the present. The hermeneutical analysis asks for the meaning which *is given* to a new technology in view of particular techno-future. It is not in predicting the future or anticipating the futures but a basis to examine a highly problematic "today".

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<sup>12</sup> Named after Vilfredo Pareto, it refers to reaching a state of allocation of resources in which it is impossible to make an individual a better off without making at least one individual worse-off.

<sup>13</sup> Going beyond a prognostic (mode 1) and scenario-based (mode 2). See [118] [119]

But RRI opens room to reconsider not only the relationship between the present and the future, but the notion of responsibility as well. As will be shown in the next section, RRI is conceived even as meta-responsibility.

### 3.2.8 RRI as meta-responsibility

Another summarized account is that of Stahl et al. [50], who like Grunwald use the notion of responsibility as a point of departure in conceptualizing RRI (in their case RRI related to information and communication technologies). Firstly, responsibility is examined as a social ascription, as a social construct that establishes relationships between a set of different entities. It needs to be born in mind that responsibility ascriptions are always an evolving network where novel circumstances require redefinitions and adjustments. Stepping on that, it is suggested that RRI need to be regarded not as yet another responsibility to be ascribed, but as *meta-responsibility*, as a higher level of responsibility, as responsibility of aligning all other role-ascribed responsibilities. This comes from the realization that in human practice there is a web of inextricably interlinking responsibilities, some mutually supportive, some conflicting. RRI needs to establish itself as responsibility for responsibilities (legal, moral, role, professional, individual, collective, etc.):

“RRI can aim to align responsibilities, to ensure they move in a particular way. RRI can define socially desirable consequences that existing responsibilities can work toward and develop responsibility relationships that ensure that the achievement of such desired aims is possible.” [50, p. 202]

In doing so, it is advised to follow four directions of inquiry, four dimensions of RRI – product, process, purpose and people. As was shown in subsection 3.2.5, the process dimension is very important, particularly for our text, since it is concerned with the governance arrangement that would ensure innovations are conceived responsibly. Stahl et al. understand this as creating the regulatory framework and infrastructure (by policy-makers) so that ethics could be considered through proactive engagement of researchers, organizations and civil society beyond the usual tick-box and legal compliance approach [50, p. 212].

This proactive engagement requires ethics to be considered at very early stages of the development of a technology in order to avoid the shortcomings of post-factum regulation. As will be shown in the next section, one way to do that is to promote value-sensitive design.

### 3.2.9 RRI and value-sensitive design

Jeroen van den Hoven, in his turn, focuses on the potential of innovation to relieve our moral overload and even to solve moral dilemmas through pursuing value-sensitive design. He provides the following definition:

“Responsible innovation is an activity or process which may give rise to previously unknown designs pertaining either to the physical world (e.g. designs of buildings and infrastructure), the conceptual world (e.g. conceptual frameworks, mathematics, logic, theory, software), the institutional world (social and legal institutions, procedures and organizations) or combinations of these, which – when implemented – “expand the set of relevant feasible options regarding solving a set of moral problems” [51, p. 82].

In his account responsible innovation meets higher order of moral obligations as a stimuli to innovate. If innovation is usually assumed to create novel experiences which entail ethical conflicts (for ex. in medicine), responsible innovation, by “coding” sensitivity to values in the design of its products or processes, contributes for S&T development while solving those conflicts. And since no technology is ever neutral and advances a particular conception for the good life [52] responsibility in view of innovation could be regarded as:

“[t]he obligation to bring about a change in the world that allows us to make more of our first-order moral obligations (e.g. for security and privacy, economic growth and sustainability, safety and security) than we could have done without the innovation” [51, p. 78]

This entails recognition of the power of innovation to introduce social change and the moral charge of that possibility and the duty that power to be steered towards revered values beyond mere technical functionality or economic expediency.

Jeroen van den Hoven was also the chair of a prominent report on Responsible research and innovation [53] which provided a working definition for the European institutions. The text argues the rationale of RRI stepping on comparisons between contested and successful innovation and introducing responsible innovation as a mode of innovation governance which is more likely to fulfil the promises of the European strategic documents for smart, sustainable and inclusive growth. The definition the expert group provided is as follows:

“RRI refers to ways of proceeding in Research and Innovation that allow those who initiate and are involved in these processes at an early stage (A) to obtain relevant knowledge on the consequences of the outcomes of their actions and on the range of options open to them and (B) to effectively evaluate both outcomes and options in terms of ethical values (including, but not limited to well-being, justice, equality, privacy, autonomy, safety, security, sustainability, accountability, democracy and efficiency) and (C) to use these considerations (under A and B) as functional requirements for design and development of new research, products and services.” [53, p. 12]

As it could be seen, this definition is highly influenced by the insistence of Van den Hoven on value-sensitive design so that what is usually perceived as “non-functional” requirements to become embedded in the innovation products and services. What is crucial is also the temporal aspects of that commitment - at the very outset of a project. The authors accentuate on the need for a comprehensive framework for R&I governance (RESPONSIBILITY as a coordination action as part of this endeavour) which would step on some existing practices in member states and the EC such as:

- considering societal needs and ethical aspects in research funding programmes, e.g. through public and stakeholder dialogue;
- developing criteria for the early appraisal of research and innovation, e.g. technology assessments;
- establishing processes to better integrate societal needs in research and innovation, e.g. transdisciplinary approaches in sustainability science;
- setting up advisory bodies such as councils on ethical aspects of new technologies.

In arguing the necessity of the integration of such comprehensive framework on an EU level of R&I, the report builds the argument by referring to the cost of contested innovation

which has not incorporated ethical considerations and societal needs of the public, and the value of those latter as an engine for further innovation. In other words, the report takes a neo-institutional economic stance arguing the economic expediency of RRI in preventing market failure and boosting new market and innovation niches. There are two important components which need to be reflected in the design of the research and innovation processes and products:

1. Ethical acceptability;
2. Orientation towards societal needs.

In the logic of the report ethical acceptability is understood as a legal compliance with the Charter of Fundamental Rights of the EU and safety standards reflecting the acceptable risk of products. The ethical principle lurking behind those two considerations is avoiding harmful innovation. As to the requirement for orientation towards societal needs, it is laid out as contribution to achieving objectives of sustainable development or to achieving broader normative objectives such as gender equality, improved quality of life and other aims inscribed in EU constituting documents. Thus, the EC as an executive body following the direction of achieving smart, sustainable and inclusive growth, might more easily recognize RRI as the suitable approach for innovation-led economic development while addressing the grand challenges of our time.

This hides particular risks with regard to the interpretations of what concretely responsibility in innovation entails (e.g. focusing on the economic significance of innovation). In the next section, we will go back to the notion of responsibility and summarize the ways it has been approached in RRI accounts.

### **3.2.10 Responsibility and R&I**

The previous sections demonstrated some of the themes through which the notion of responsibility has been introduced in view of innovation governance. One direction is focusing on problematic innovation (which begs the question “How to innovate responsibly?”), another – on the prospective dimension of responsibility and sustainability, a third – on RRI as meta-responsibility. This section will concentrate on the various approaches more generally in considering responsibility within the notion of RRI.

There are several ways in approaching responsibility in view of R&I. One strand of thought concentrates on the responsibility assumed by actors in the R&I process to integrate various “external” for the S&T field considerations. On the one hand for the researches that might mean to extend their understanding on responsibility beyond professional scientific ethics (rigorous pursuit of scientific truth) and take into account the embeddedness of innovation products and services into society. On the other hand, that might be extending the responsibility of the public in the form of collective responsibility by involvement in the steering of the innovation process towards societally desired and ethically-informed ends. On the third, it could be the responsibility of policy-makers to create the conditions for the first two.

Another strand of thought on responsibility as to RRI does not concentrate on the agency but on the features of the process. The focal point is the governance arrangements that would allow for responsible process of R&I. Here RRI is implied in a proceduralist insistence on transparency, openness, meaningful participation and deliberation, democratic governance on intent and so on and so forth.

A third approach, one which is conceived in the report on the policy options for RRI, goes both beyond the ascription of responsibility just to individuals or processes. It is not the innovation products and processes that are responsible. “Responsible innovation” is an expression which is used “to refer in the realm of innovation to whatever invites, accommodates, stimulates, enhances, fosters, implies or incentivizes responsible action and the mental states that are typically associated with it” [53, p. 55]. It concerns *ways of proceeding* in research and innovation that involved agents might feel, be held or be made responsible. The report outlines three conditions with this respect: freedom, knowledge and moral capacity.

The first one in view of RRI implies that relevant agents seeks ways to “shape” the future (not only to expect it) by actively seeking alternative paths, points of intervention for diverging from projected courses, reflection on their prospective choices by exercising freedom (as the possibility of intentional intrusion into reality to influence it). The second one refers to the relationship between knowledge and responsibility and the fact that being aware of your actions allows for the ascription of responsibility. The implications in view of RRI are that the innovation process needs to be conceived, organized and handled in a way that ignorance is minimized and relevant knowledge is provided for the concerned persons and stakeholders. The third one is very important since it gives the necessary underlining of the previous two. For innovation governance it means that:

“Applied to responsible innovation this would imply a moral capacity, sensitivity and in general a capability to evaluate actions, options, consequences and knowledge in ethical terms on the part of researchers and those involved in innovation processes.” [53, p. 57]

The lack of any of these conditions does not exonerate from the appeal of responsibility. That is why proactivity in this notion of responsible innovation is very important – as the conscious effort to seek relevant knowledge and look for alternative pathways having in mind all concerns about the ethical acceptability and the societal desirability of the outcomes. Thus responsibility is not an attribute to innovation or innovators. It is incepted and accommodated in a process if the latter fulfils the three conditions above.

As we will see in the next section, the way responsibility is conceived within the various RRI accounts is at the heart of some problems of the theory on RRI in general.

### 3.3 Some problems within RRI accounts

This section will pay attention to some problems which could be identified in the logic and the specific provisions within the RRI theoretical field. The comments are not exhaustive for all the stumbers one may face when trying to conceptualize or implement RRI. They in a way complement what has been outlined in the prior subsections.

The above mentioned accounts concentrate on the necessity to bridge innovation and responsibility (i.e. how to make innovation “responsible”). They all try to shed some light on what innovation needs to be responsive to (ethical concerns, societal needs, public expectations), how (e.g. by integrating participatory structures, deliberative mechanisms, value-sensitive design, social experimentation, etc.), by whom (who are the relevant actors/stakeholders/concerned parties) and for what reason (e.g. re-contextualizing science, avoiding problematic innovation, addressing democratic deficits in policy-making, etc.). Nevertheless, they say very little on the procedural aspects of their definition - how practically could those aspects of RRI be translated into a meaningful and efficient practice?

This represents the main problem in all RRI accounts – what are the necessary and concrete institutional arrangements that would allow the transition from the idea of Responsible innovation governance to the actual process of responsible innovation governance.

Part of this problem is another problem – most of the accounts implicitly consider responsibility as an addition to innovation, as an ascription that needs to be made relevant, and not as something which will be initiated in the process of reflexive ethical thinking. That is at the heart of the usual approach of defining the conditions of RRI through attempts to define an alternative meaning and possibility of responsibility in view of the R&I process. The outlined logic leads to perceiving ethics as a result of the governance process not as implied into it at the very outset, hence ethics comes as an add-on and not as a condition of innovation governance. This conceptual separation between responsibility and innovation is also the reason why responsibility is very often comprehended in terms of the perceived “responsibility” of the products of innovation constructed through the already established aspects of RRI (transparency, participation, etc.). An example of this restrictive approach is considering certain technology as “responsible” *if it leads* to more transparency omitting the very important question of whether transparency was implied in the process of its development.

Almost all of the accounts on RRI insist on integrating ethical and societal considerations into the innovation process in order to address the acceptability of its marketable products. Furthermore, they stipulate that responsibility with regard to innovation governance has nothing to do with the legal connotations of the term, that it differs from liability, accountability and fault in the judicial sense of the word. Among the reasons behind that insistence are: the difficulty in tracing the actual causality in complex socio-technical systems (i.e. tracing fault), contemporary innovation processes as collective endeavours (the subject of legal responsibility is the individual); the temporality of legal responsibility (implies only after-the fact regulation). Still, within the institutional framing of RRI that aspect of responsibility is present as a legal compliance approach. The problem is not on the insistence on the latter, but on the misrecognition of that as exhausting the ethical review process for project proposals. Actually, within the RRI notion the danger is twofold: diminishing of ethics to adherence to the available normative framework on the one hand, and neglecting the seriousness of the question for legal responsibility on the other. Why the legal aspect is so important? First, because innovation is introducing discontinuities and social change raises the question of the prospective legal framework that needs to be constructed in preserving the public interest. In other words, the problem of the inevitable lag between emerging technologies and the conceiving of the appropriate framework of regulatory regimes for them. A second question is how the social change introduced by an innovation affects the content of established judicial terms and contents of the norm. A third problem is escaping legal responsibility (when such could be identified) using the appeal of collective responsibility for science and technology in order to advance non-litigiousness [54]. All this calls for deeper considerations with regard to the limits of evidence-based regulation and the temporal disjunctions between research and innovation-application-effects-regulation. There also a lot of uncertainties as to how the users will adapt certain technology or how creators/managers of that technology will readapt it for their own needs once being integrated in social habits (e.g. social media).

At the same time, exactly the lack of serious theoretical elaborations on responsibility in view of research and innovation leads to a situation in which the meaning of responsibility in RRI is somehow intuitively apprehended because of the moral tones of the notion.

Nevertheless, the connection between responsibility and reflexive governance of innovation is underexplored. In view of that, existing accounts on RRI tend to reduce the problem of reflexivity either to the availability of reflection or to first-order reflexivity. The former implies the availability of critical distance for speculation on one's positions, beliefs, stances and their context; the latter is the using this self-reference as a foundation for action, thus reproducing a circular interaction between the constructed images of the context and action upon the perceived context. In search for answers in the conceptual evolution of RRI, the notion of second-order reflexivity opens room for addressing some of the great challenges before the implementation of RRI<sup>14</sup>.

Another problem is the reference to the notion of collective responsibility. The latter seems intuitively right in view of the efforts to reconsider responsibility under the umbrella of RRI and the appeal to search for more inclusive forms of interaction between the research community and the users of innovation. It is also in tune with the proceduralists' concern of how to create the conditions for a meaningful engagement of the various societal actors in a horizontal process of public policy-making, that is, the conditions for sharing the responsibility within a collective action in innovation governance. The concern of this text is that, resorting to the notion of collective responsibility could open room for political misuse and diminishing the importance of political responsibility.

In RRI accounts collective responsibility is being introduced as a response to the need to avoid the existing separation between innovation and its regulation by initiating collective conversations. The involvement of outsiders for both the science community and the policy-making world is the prerequisite for the mere possibility of collective responsibility. But when it comes to actual practices very easily this idea could be exploited for the publicly-justified reallocation of responsibility away both from innovators and regulators in cases of unintended outcome and unexpected consequences. Thus the problem with the notion of collective responsibility implied in RRI is that in actual governance practices it might lead to dispersion of responsibility instead of sharing it.

The next pressing that stands with regard to the implementation of RRI is the private sector uptake of the idea. Although RRI is conceptualized as a governance approach in publicly funded research, we cannot ignore the relevance of the questions that notion raises to private-led innovation. And this is a serious matter in view of the significant presence of the private sector in knowledge and innovation-generation processes. How RRI could be made appealing for market agents, whose survival depends on profit-maximizing strategies very often at the expense of ethical, societal and sometimes legal considerations (which are

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<sup>14</sup> This is very important since certain institutional arrangements could advance or even define certain perceptions on ethics and the place of ethics. That is why it is needed to be paid attention to a very important distinction which has implications for considering the place of ethics in research. It is the one between first-order reflexivity and second-order reflexivity. Simply put, first-order reflexivity is a reflexivity which does not put into question the conditions that make it possible. In other words, it is a reflexivity which stems from the framings and presuppositions and does not examine those same framings and presuppositions that produce certain ways of addressing a problem. With regard to the integration of ethical reflexivity in research and innovation, realizing this distinction has very important implications. If ethics considerations stay on the level of first-order reflexivity this will produce a vision on the place of ethics the way it has been approached up until now – legal compliance drift and reducing ethical reflexivity to a tick-box exercise of identifying pre-defined problematic issues.

usually considered for “externalities”? This represents one of the dangers for RRI – in the quest to promote it to all relevant agents with regard to innovation, it might lose some of its normative appeal and its legitimization be constructed only in terms of “cost” (of corrective actions). This is what stands in some attempts to justify its relevance and present its value as a counterpoint to *problematic innovation* – contested, controversial, or “irresponsible” (as pertaining unexpected costs). The danger consists of using RRI as a public relations strategy, very much in the spirit of Corporate Social Responsibility. Rene von Schomberg identified four reasons behind cases of problematic or “irresponsible” innovation:

1. technology push: setting aside stakeholders’ views, pressing for market realization, untimely regulation (GMO case);
2. neglect of fundamental ethical principles – omitting mechanism for protecting values hold dear by the users into the initial design of the innovation product/process (e.g. Dutch electronic patient record system);
3. policy pull: – policy makers eager to accept and promote the implementation of certain technologies without proper public debate (e.g. the use of body scanners);
4. lack of precautionary measures and technology foresight: ignoring negative consequences of innovation (e.g. asbestos, hormones as growth promoters, benzene, etc.) [46, pp. 60-63].

This is the reason why Schomberg insists on the use of Technology Assessment and Technology Foresight, along with the application of the precautionary principle not only for anticipating the positive and negative impacts of innovation but also to open room for new innovation trajectories.

All this is a signal for the *economic inclination in justifying the need for RRI* evident in the tendency to depict societal wellbeing and development in highly economized manner, put innovation at the heart of the global market success of the European project (Europe 2020), and the neo-institutionalist influences in the adoption of the notion of good governance, applied to the European Union. In certain cases [55] the appeal for RRI sounds similar to the one for re-considering economics in classical politico-economic light with shifting the market agents’ focus from the feasible profit to satisfying the needs of the citizens (the demand-side in economic terms). Resorting to RRI then appears as a gesture of reformed economic thinking, especially relevant in the aftermath of the world financial and economic crisis, where financial instrument innovations proved to be “irresponsible”. This manner of referring to RRI/RI as economically expedient hides the risk of perceiving innovation mainly as an adaptation tool (in view of the volatilities in the market) and restricting societal needs to consumer demands. The consequence of such an approach would be that RRI be boiled down to innovation management for market survival in a changing economic environment and “open innovation” – to crowdsourcing, user-led innovation, organizing communities of active users, experience-based design inputs, employee involvement as instruments of tapping information for better market realization of products and services. All those come as an adaptation tools in a new innovation environment. Opening up the “innovation game” is believed to create more innovation opportunities by lowering entry barriers [56].

Thus “open innovation” might be seen both as promoting innovation dynamics (including in the public service field) and addressing market asymmetries (opening the innovation field for SMEs). Those latter could be found in the new EC (with Jean-Claude Juncker as its president) direction towards open innovation in connection with the need to reinvigorate the European economy and address fairness in the market (by giving SMEs more

opportunities). Therefore, referring to the economic benefit of applying RRI poses a danger to shrink its significance reduced to measures for optimization of research outcomes, in which participation is reduced to consumers' unidirectional input and deliberation – to eliciting profit-relevant information by the users.

As we will see in the next section, reducing participation to consultancy and deliberation to communication, is one of the greatest problems in view of the implementation of RRI.

### 3.4 Challenges before RRI implementation

Before going concretely to the difficulties with regard to the implementation of RRI, we need to recall the merits of the notion of RRI and the advancements it introduces in view of the thorny issue of innovation governance. All of the overviewed accounts on RRI share some novel elements, which are at the heart of the appeal of the idea. We have summarized them below:

- Innovation as a co-constructive endeavour – involvement of users, stakeholders, citizens, policy-makers;
- Alignment of research and innovation with societal needs and values;
- Addressing the acceptability and acceptance of innovation products and processes;
- Transition from post-factum regulation (risk-assessment and compensation) to a continuing process of governance;
- Temporal re-adjustment of (research and) innovation governance (engagement with the process at the outset; iterative integration of ethical, societal, and legal considerations in an anticipatory manner throughout the innovation cycle).
- Avoiding problematic (contested, controversial, “irresponsible”) innovation and all its negative consequences (costly corrective measures, loss of legitimacy of public institutions, tarnished public image of corporate players, etc.);
- Prospective and collective aspects of responsibility in research and innovation;
- Do not exclude existing tools such as TA, Foresight, precautionary principle;
- Emphasis on making innovation responsible, i.e. the conceptual separation between innovation and responsibility and RRI as a bridging mechanism which would ensure the public uptake of innovation.

What all RRI accounts share, as a component of making innovation governance responsible, is the appeal for participation of the public. As has been demonstrated (see chapter 2) the visions concerning the involvement of citizens evolve from engagement of organized civil society groups in the 1980s to the wide public in the 1990s with the main aim of achieving public understanding of science (PUS) and promoting science communication. With the beginning of the new millennium there are more voices to reconsider the interaction in the opposite direction – this time science needs to listen to the citizens' concerns about harm, risk, danger, ethics, impact, long-term consequences, etc. within specially organized for that cafés, focus group, seminars.

Within the broader framework of the place of science within society RRI reminds an attempt to restore the modern meaning of progress and reconcile human development with scientific advancement (H2020 Science *with and for* Society through encouraging RRI is telling for this tendency). The liberation pathos of the Enlightenment has turned into a

scientism rigidity separating knowledge (restricted to scientific truth) from values (pursuit of “the good”). The domineering perspective of the neutrality of science was at the heart of the technocratic “enchantment” of policy-making before the 1970s. By questioning the neutrality of science and the value-laden nature of all the produced knowledge nowadays, RRI opens space for bringing back together politics and S&T by establishing innovation as the scene for renegotiating different societal visions. As Fukuyama [57] noted, after what he perceived to be the end of history (end of ideological clashed), politics might re-emerge on the basis of S&T advancement and all the new dilemmas, political questions and identities that will introduce as a point of possible conflict. Having in mind that all the stakeholders’ perspectives reflect, in one way or another, ideologically laden visions of the good life, RRI governance is inevitably political. The problem is how to accommodate the plurality of normative stances or to ensure the compatibility between the diversity of values into a collective policy-making. And here we reassert the relevance of the proceduralists’ quest for conditions that would allow for collective action (not only conceiving the norm but inscribing the conditions of its application within the norm itself).

But the actual opening-up of the dialogue is fraught with difficulties. In an examination of the normative, instrumental and substantive motivations for public dialogue Sykes & Macnaughten (2013) found that initiatives for public participation are still regarded as add-ons to established structures rather than constitutive for a new mode of interaction with the public. Having in mind that, they note the “need to move beyond thinking of public engagement in isolation, to talk about *governance in the public interest*” [emphasis in text] [58]. The second difficulty is in finding new ways to respond to the substantive character of public hopes and concerns on: purpose of particular areas of science and the motivations of those involved; the question of trust (to government and industry); the perception of powerlessness; the speed and direction of the innovation process; ethics and social benefit. The third difficulty is ensuring the continuity of the dialogue beyond one-off legitimizing events. The last difficulty they identify is the applicability of the arguments for open debates with the public to different cultural and political contexts.

It is evident that Responsible research and innovation is in a difficult situation in which the advantages it introduces present those committed with the notion with a series of difficulties concerning the procedural realization of the conditions for responsible governance of innovation. They introduce very serious challenges that need to be taken into account and addressed within the coordination efforts of the RESPONSIBILITY project:

- avoiding top-down understanding of normativity inscribed in the governance process. Simply put, this means that the mode of interaction between the participants in the governance process should not follow well-known models of interaction on the basis of privileged source of knowledge (e.g. as instruction/consultations from experts);
- addressing the cognitive framings of the participants and settling new normative horizons. This means that the mechanism needs to promote overcoming of the potential ideological stances, which in its turn requires achieving a certain level of/ capacity for reflexivity. What conditions need to be set so participants could be willing and able to question their own presuppositions, beliefs, ideological stances, and “truths”, and not only change their mind but collectively conceive norms that would incorporate the conditions of their application. There is a lack of problematization of the notions of context. Most RRI accounts presume the equivalence of context and external environment. What is left aside is the cognitive

- aspects, i.e. the fact that the externality and the features of the context are constructed. RRI scholarship will only benefit in its conceptual searches from the recognition and exploration of the cognitive framings which produce and somehow naturalize certain “images” of the context.
- to ensure that participation structures are not exploited only for legitimization purposes (e.g. public-private partnerships) but are effective governance mechanisms;
  - to determine the scope/nature/quality/sustainability of the multi-actor involvement. Is a participatory structure allowing deliberation? What diversity of perspectives is reflected in the participatory structure? Is the participatory structure reproducing power asymmetries? Does the governance process ensure continuing engagement of the participants in the inception, application and renegotiation of the norm? How will those actors be defined? For example, the notion of “stakeholders” implies organized interest, thus high chance of reproducing a non-horizontal mechanism of participation, based on representation of interests.
  - addressing the status of ethics. Common approaches place ethics as a complementary concern in the innovation process (post-factum ethical review, checking compliance with professional codes of conduct, adherence to the existing legal framing). Others try to integrate it through interdisciplinary consultations (ethics as specific expertise provided by the social sciences and humanities) or through attempts to take into account values held dear by the public into the innovation construction (value-sensitive design). What RRI approaches need to overcome is the perception that ethics is somehow independent, separate component (one pillar) and not a condition (implied throughout the process) of innovation governance. The other very difficult challenge is to change the perceptions on ethics as an innovation-averse censor of S&T development and establish its image and reality as inevitable and enriching condition of that same development.

This last challenge is very serious and demanding since it entails a whole new set of problems as to the implementation of RRI. It first requires awareness of the difference between morality and ethics and the fact that ethical thinking need not be regarded as an act of imposing rules or demanding compliance with de-contextualized (universal, ensuing from a transcending authority – reason, deity, etc.) norms, but the *process* of incepting normativity while avoiding hierarchical structures of interaction in which the emerging shared normative horizons will take into account the contextual application of the norm. This reflexive perspective on ethics implies: that the latter cannot be boiled down only to sectorial concerns (compliance with professional standards or codes of ethics); that it need to be present on every level of research and not be a pillar, add-on or a component of responsible governance of research and innovation. This is especially relevant for the RESPONSIBILITY project as one responding to the lack of conceptualizations in the RRI theoretical field on the implementation conditions of RRI on the one hand and to the compartmentalized implementation instruction of the European Commission (the six separate “keys”) on the other (where restricts ethics to a separate component engaged with legal compliance considerations in research and governance – to government).

One of the aims of the RESPONSIBILITY project is to provide the medium (electronic space for interaction) for storage of knowledge (the repository and monitoring function of the Observatory) and knowledge-creation (participation and deliberation through the Forum)

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with regard to the notion of RRI. This will allow tracing the developments in the field, identifying problematic issues and raising alert, but also creating the conditions for addressing the conceptual inconsistencies and insufficiencies with regard to both the RRI definition and RRI implementation. The Forum and the Observatory as means of networking will enable the further development of the idea of RRI by providing a platform for the encounter and exchanges between various perspectives from different contexts around the world towards a co-construction mode of interaction while addressing the abovementioned challenges.

It must be noted, however, that the problem of the implementation of RRI cannot be addressed without realizing the importance of the issue of governance. That is why the next chapter is devoted to the theoretical developments on governance, to instances of its “contextual” adaptation (e.g. in the work of international organizations) and the implications for the EU’s interpretations on what it actually implies.

## 4 The Problem of Governance

The first two chapters of the deliverable demonstrated the importance of the issue of governance with regard to creating the necessary conditions for engaging the public in the research and innovation process, which pertains to the ambitions of RESPONSIBILITY as well. The text also illustrated the irrevocable link between governance and the possibility for ethics reflexivity in the implementation of RRI. Given that, the sections that follow will go deeper in the scholarship on governance. First, they will follow the evolution of this concept, reflected in several strands of theories. Then attention will be paid on the notion of “good governance”, its variations and its influence in the EU’s interpretations of governance. This is very important for focusing the problem of RRI implementation around the problem of governance and justifying its inevitability when considering the role of RESPONSIBILITY’s Forum and Observatory with that respect.

### 4.1 Governance theories

In the recent decades the term “governance” has become an inevitable part of the policy-making vocabulary to denote a change that has taken place/or need to take place in the way societies are being governed. This change is usually depicted in contradistinction to “government” as a vertical, hierarchical, command-and-control type of governing. Governance, on the other hand, is generally assumed to imply flexible, horizontal, beyond the traditional regulatory top-down approaches mode of governing. This shift is usually explained as a reaction to the diminishing capacities of the state to exert its governing powers efficiently and effectively in the context of globalization, increasing complexity and interdependence, growing uncertainty, and cultural and technological changes. It is through the crisis of the national state that new governance modes are being thought upon, usually through pointing out the importance of new actors (e.g. NGOs) in the political process and new forms of interactions (within the notions of collaborative, participatory and deliberative democracy). The emergence of the governance narrative cannot be attributed solely to adaptation efforts to a changed reality. A very important aspect of this process is how all the changes in attitudes and practices go along with the introduction of interpretations on governance by the social sciences, to conceive new rationalities on governing, governance and government through conceptual exploration of new actors, new organizational structures, new policies, and new patterns of public authority.

One strand of literature on governance explores its adequacy in terms of the globalization process and the growing interdependence between international agents. In the realm of international relations, especially from the 1990s on, a pressing question has been how to have a global order without a global governmental authority. In other words, what would be the mode of arrangements within an international anarchical system so that we could avoid the two extremes – hegemony and chaos? James Rosenau speaks about **governance without government** as “regulatory mechanisms in a sphere of activity which function effectively even though they are not endowed with formal authority” [59, p. 5]. Another direction of research focuses on the increasing complexity and fragmentation of societies and the emergence and organization of networks as a complementary or substitutive of hierarchical decision-making (see Rhodes [60], Castells [61]). In the accounts of social scientists authority and power are depicted as diffused, shared, contested, and elusive. A new mode of horizontal societal arrangements, with the help of new technologies, is gaining force and decision making is subject to multiplicity of actors: nation-states, international

institutions, associations of nation-states, regional and local governments, and non-governmental organizations and even individual agents (e.g. the Snowden effect). Some accounts put emphasis on the crisis of governability of the welfare state [62], others – on cultural shifts favouring cause activism, participation, post-material values challenging traditional forms of authority, regulation, bureaucracies [63]. Another connect them with ideological changes and the neo-liberal turn in policy-making which allowed stronger involvement of the private sector through public-private partnerships, consultations, impact on the legislative process and forming the regulatory frameworks [64].

The concept of governance is not a novelty in the vocabulary on governing. It has gained prominence and spurred heated debates in the last 20-30 years in view of its adequacy, explanatory potential and normative power due to a general perception of existing crisis of governability in contemporary societies and the need to address the problem of governing highly differentiated societies. However, definitions of governance exist early from the 1940s, and are being used throughout the 1960s, 1970s and 1980s mainly with reference to the economic field and the organization and management of private entities – firms, corporations, etc. Still, the concept was used within the emerging term of “private governments”, coined by Charles Merriam and stemming from the interest of the governing process in private associations in comparison with that of public government. He described “governance” in a very generic sense of availability of rules or regulations no matter the realm: “[t]he thread of governance runs through all the web of social life in varying forms, in varying units. The problem of systems of rules, the problems of consent, and the problem of leadership are common to all units of association, whether labelled public or private” [65, pp. 1-2]. And this notion is understandable in view of the detected **differentiation** of society. Governance is an overarching term to explain that differentiation – that every entity, be it a labour union, a university, a corporation, has **its own** rules, regulations, codes, personnel, common understandings, plans for the future, etc., its **own mode of governance**. Furthermore, with the notion of governance has been challenged the idea that government is a prerogative only to the state and that authority and responsibility of governing has been distributed towards private and voluntary associations [66, p. 308] thus sharing the burden of government with public authorities. This strand of governance theory introduced the theme of autonomous, self-governing units of society which share the governing of individuals with public authorities. At the same time it opens the question of the possible tension between overarching public goals (implied in politico-philosophical ideas such as equality, justice, freedom, etc.) and the specific strategic goals of the private entities (profit, membership, excellence, etc.).

The realization that we inhabit structurally differentiated societies guided a later, second strand of governance theory – one informed by the advances in system theory and cybernetics<sup>15</sup>, and aiming at the problem of how to govern complexity. It is a move in

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<sup>15</sup> Cybernetics is the science of communications and automatic control systems in both machines and living things. There are many definitions of cybernetics and many individuals who have influenced the definition and direction of cybernetics. Norbert Wiener, a mathematician, engineer and social philosopher, coined the word "cybernetics" from the Greek word meaning "steersman." He defined it as the science of control and communication in the animal and the machine. Ampere, before him, wanted cybernetics to be the science of government. For philosopher Warren McCulloch, cybernetics was an experimental epistemology concerned with the communication within an observer and between the observer and his environment. Stafford Beer, a management consultant, defined

regarding governance from a feature of particularistic polity (corporatism) to a holistic approach towards the dynamics of the interaction between the societal parts, and between them and their environment. The primary question is how to control in complex systems. However control is understood not as coercions but as **self-regulation through mechanisms of feedback**. This schematized representation of social reality is boiled down to communication, therefore the right flow of information, rich interconnectivity, the growth of feedbacks, the ability for to teach itself, the law for requisite variety are very important in governing complexity. In later versions of governance theory and proceduralism they will be translated as transparency, partnerships, consultations, inadequacy of hierarchical centralized forms of authority and so on. The focus on the possibility and effectiveness of control in complex systems, borrowed by the social sciences, somehow omitted the question of the existence of a shared normative horizon in a society (justice, equality, freedom, etc.) and made possible the conceptualization of the process of governing in the framework of the transition from government to governance within the context of highly differentiated societies, in which dynamics, diversity and complexity are the three main governing challenges [67, p. 74]. The cybernetic influence on the theory of governance contributed for the emergence of governance rationality, in which the focus is not on the achievement of ideologically-conceived overarching societal goals (provided usually by political platforms) but on the viability of the system – its ability to steer into instability, uncertainty and highly volatile environment (governability). For that end the conventional ex-ante modes of government regulation need to be replaced by more flexible mechanisms of feedback control output. Translated in governance practices, this requires that societal topics be subject to dialogue with as many actors as possible. In other words, it needs governance arrangements to foster better communication for rapid and effective response in order to guarantee the viability of the system.

Social systems theory and the emphasis on the highly differentiated social system into quite autonomous sub-systems led to some changes in legal theory – the notion of reflexive law aimed at “legal control of self-regulation” by enabling procedures rather than achieving substantive societal goals. The focus on efficiency and the irrelevance of grand societal goals is also at the heart of neo-institutional economics (e.g. Coase [68] [69], Williamson [70] [71] [72], Hollingsworth [73] and Lindberg [74] [75]), interested primarily in the reduction of transaction costs for the achievement of economic efficiency. They introduced the “governance” concept to refer to institutional matrixes or structures as alternative of the market price regulation for improving economic performance and obtaining better economic outcomes. That is why their preoccupation is with how political institutions could provide governance structures that would satisfy this aim in order to secure economic growth. This same neo-institutionalist pathos is behind the governance recipes of international financial institutions such as WB, IMF in their dealings with Third world countries through the notion

cybernetics as the science of effective organization. Anthropologist Gregory Bateson noted that whereas previous sciences dealt with matter and energy, the new science of cybernetics focuses on form and pattern. For educational theorist Gordon Pask, cybernetics is the art of manipulating defensible metaphors, showing how they may be constructed and what can be inferred as a result of their existence. Because numerous systems in the living, social and technological world may be understood in this way, cybernetics cuts across many traditional disciplinary boundaries. The concepts which cyberneticists develop thus form a meta-disciplinary language by which we may better understand and modify our world [121]

of “good governance”, but also behind the EU’s interpretation on governance which accentuates on the interdependency between R&I and the economic performance of the Union.

In the 1980s-1990s the notion of networks entered neo-institutionalist discourse as part of the efforts to come up with organizational structures that would facilitate economic performance by reducing transaction costs in comparison with market and hierarchies (Jarillo [76]). They are perceived as more advantageous form of organization since allow for better flow of information, something which, as already mentioned within cybernetics, is crucial for the viability of the system. As of today, scholarship on *networked governance* is interested in providing solutions for policy problems in complex adaptive systems. Networks are being explored as a means for integrating various capacities and resources usually distributed sectors and levels of organization. The rationale behind this approach is the need to open up the conventional governance processes (government) for “internalizing” in the problem definition and problem solving process what have previously been perceived as externalities, thus creating the conditions for reflexive governance. Voss&Kemp [77] identify six strategies in this respect:

1. integrated knowledge production,
2. experiments and adaptivity of strategies and institutions,
3. iterative, participatory goals formulation,
4. anticipation of long-term systemic effects of measures (developments),
5. interactive strategy development, and
6. creating congruence between problem space and governance.

However, as in other theoretical elaborations, the issue of implementation raises an array of problems. Such is the so called *efficacy paradox* of reflexive governance which stems from the opening up the governance process for diverse interests, values, viewpoints in order to have more complete knowledge-creations process and along with that the need to close down the process by reducing the vast variety of societal perspectives into stable strategies. With reference to this text, the efficacy paradox is concerned with the tension between participation and deliberation in the governance of research and innovation.

In the search for alternative governance structures in a situation of complexity, neo-corporatism has also given its contribution with what is conceived as “associative model of social order” as a new approach for public policy making beyond neo-liberal and communitarian models. Stepping on the understanding of private governments and introducing the term private interest governments as “collective self-government, self-regulation, self-discipline, or self-control by interest groups in specific policy-areas” [78, p. vii] as key in assisting the state for enhancing effective public policies. This comes from the commonplace for the 1970s’ preoccupation with the “organizational” reasons behind the policy failure of the welfare state (e.g. Sharpf [79], Mayntz [80] [81]). Thus the problem solving capacity of the state needed to be put into scrutiny with regard to the structural and organizational conditions for better policy outcomes in the context of complex and highly differentiated societies. Here the notion of governance denoted an understanding for organizational arrangements that allow for effectiveness and efficiency of public policy. Outcomes are perceived as dependent on organizational structures.

All the arguments in the various strands of governance theory have implications for the construction of the Forum and the Observatory in RESPONSIBILITY as a proceduralist way to

address: the structural differentiation problem, which leads to something of a normative sectorialization of contemporary societies; the increasing complexity of socio-technical systems by opening channels for better communication with the help of feedback mechanisms (argument coming from cybernetics); the institutional matrixes that would allow better performance and increasing efficiency in the R&I field (argument coming from neo-institutionalism); the need for collective self-regulation in line with the “associative model” (argument coming from neo-corporatism). However, the true challenge for RESPONSIBILITY goes beyond those directions. It is actually in creating the conditions for reflexive governance and by realizing “The Network of networks” idea (see Del.2.1) - for providing a meta-network, an infrastructure that will allow gathering of distributed knowledge in an attempt to engage scientific, expert, local and laymen perspectives into a knowledge co-creation process.

In order to bring more clarity on the governance challenge, the next section will pay attention to the notion of good governance, how the latter has been employed in the agenda of different international organizations in view of the influence those have in the EU’s general interpretation of governance.

## 4.2 The notion of Good governance

The neo-institutionalist argument was employed in the discourse and policies of international financial institutions accentuating on the importance of accountability, transparency and participation, rule of law and efficient public services as essential conditions for the success of development policies in Third world countries. One of the problems of those bodies was the different outcomes of the economic policy prescriptions in the experience of different countries. In search for the best strategy to achieve good economic results in their respective client states, they turned to the question of the importance of the institutional environment for reducing transaction costs and improving economic performance. That is how the notion of good governance emerged, in a way intuitively, to denote the essential need of certain institutional conditions that would favour the result of the employed economic policies. Those institutional conditions, or governance arrangements, should be conducive to business development. In other words, governmental issues of “good order” such as civil service reform, legal reform, accountability for public funds, budget discipline, rule of law, etc. are viewed as crucial prerequisites for a stable and predictable business environment.

Although the WB is very careful with the political connotations in view of governance, it insists on the economic meaning of the term. The definition it gives in its famous “Governance and Development” report of 1992 outlines governance as “[t]he *manner* in which power is exercised in the management of a county’s economic and social resources for development” [82, p. 1]. Then, good governance has to do with the quality of government action towards developmental goals. As it could be seen, the notion of governance employed by the Bank implies that it is a not a novel mode of societal arrangements but refers to the way governments perform in their role as providers of sound legal normative framework and deliverers of quality public services with the aim of creating the necessary conditions for the success of certain economic policies, to enhance the effectiveness of the market and to be able to correct market failures. That is why the Bank identifies four key governance issues in view of the goal for sound development management: public sector management, accountability, the legal framework for

development, and information and transparency [82, p. 2]. In neo-institutionalist terms, these are to provide institutional arrangements that would help the market to perform better by lower transaction costs, predictability and good flow of information through the system (the insistence on information and transparency which is very important in all governance variations, including the EU's). As Joseph Stiglitz later pinpointed, the automatic application of the Washington consensus prescriptions<sup>16</sup> must be replaced with efforts to build an institutional infrastructure that would allow efficient functioning of the market while avoiding grand market distortions (market failures). Both OECD and the IMF took the concept of governance and advocated for rule of law, an efficient public sector/efficient public management, fight against corruption, policy coherence, ownership, consultation with civil society, participation, communication, dialogue, as means to create consensus and support for economic reform. The last four are very important in view of the neo-institutionalist concern, reflected in the work of Douglass North, about the need the belief systems to be tuned in a way to understand and accept the benefits of the institutional restructuring and economic reform. That is possible through the involvement of the civil society towards building a societal consensus on the economic reform. It is important to note that the EU understanding on governance borrowed these definitions and was reflected in the White paper on Governance in Europe (WPGE) from 2001. The neo-institutionalist imprint is evident on thinking governance in terms of institutional conditions for better economic performance but also in view of the insistence for societal dialogue as a means for belief system reconfiguration thus ensuring social acceptance within the EU policy making process.

The World Bank has its struggles with regard to the governance concept and insists only on its economic relevance thus rejecting any political activity/interest in its activities, although in its status as a UN specialized agency it needs to adhere and promote the principles inscribed in Universal Declaration of Human Rights and the understanding of the UN on good governance in terms of political rights such as participation, freedom of speech, freedom of association, etc. This means that international economic institutions promoting good governance understand the normative substance, related to values, as purely political, that is non-economic. This is at the heart of many problems, including in the EU notion of governance, to accommodate the normative aspect of governance. In the case of responsible innovation those practical difficulties, stemming from the implicit neo-

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<sup>16</sup>The term is used to summarize commonly shared themes among policy advice by Washington-based institutions in the 1980s and the 1990s, such as the International Monetary Fund, World Bank, and U.S. Treasury Department, which were believed to be necessary for crisis recovery, namely: Fiscal policy discipline, with avoidance of large fiscal deficits relative to GDP; Redirection of public spending from subsidies ("especially indiscriminate subsidies") toward broad-based provision of key pro-growth, pro-poor services like primary education, primary health care and infrastructure investment; Tax reform, broadening the tax base and adopting moderate marginal tax rates; Interest rates that are market determined and positive (but moderate) in real terms; Competitive exchange rates; Trade liberalization: liberalization of imports, with particular emphasis on elimination of quantitative restrictions (licensing, etc.); any trade protection to be provided by low and relatively uniform tariffs; Liberalization of inward foreign direct investment; Privatization of state enterprises; Deregulation: abolition of regulations that impede market entry or restrict competition, except for those justified on safety, environmental and consumer protection grounds, and prudential oversight of financial institutions; Legal security for property rights.

institutionalist presuppositions in the governance notion of EU, emerge in the form of implementation problems of RRI.

The notion of “good governance”, in the context of international relations, has universal appeal which stems from its connection with the human rights discourse. The right of “good governance”, however, is mainly addressed in the context of Third world states and their developmental paths. Usually it is related to counteracting political regimes which are corrupt and hostile towards their citizens, whose problems are depicted as a result of the lack of “good governance”. All these attempts to promote a good governance has its older lineage of the civilizational and commerce efforts in the past [83, p. 896]. Nowadays the promotion of good governance in the non-Western world is related to initiatives to promote democracy, free market and the rule of law. International financial institutions such as the World Bank and IMF employed the notion of good governance and the structural changes it requires as a condition for the success of their economic programmes. Nevertheless, as any politically used notion, the “good governance” discourse has its problems in view of the relation between democracy, good governance, good public performance and development. The availability of democratic institutions does not entail good governance, nor is economic success necessarily backed up by what is required as good governance criteria (ex. US governance failure during the Katrina disaster; the economic growth of human rights problematic China) [84]. Very often the required reforms for good governance are a way to further questionable neoliberal policies and the globalization agenda. But this is not the focus of our text.

What is interesting, in the context of the European quest for a unique governance model, is this recent tradition of putting governance as an instrumental condition for advancement of certain economic programme thus losing the ethical element in the notion of governance. It is understandable then, that the European Union, especially after the Crisis of 2008 and the adoption of the new Europe 2020 strategy assumes governance as one of the keys in advancing the Innovation Union agenda, and RRI as a specific European “imprint” towards that goal. Governance is not seen as a unique model of societal arrangements that would imply certain polity and ethical principles, but a set of policy measures and institutional changes that need to further a predetermined political/economic agenda (e.g. the Juncker’s 10 priorities).

But there is another direction in the depiction of good governance. In the UN discourse on the matter, the implicit connection with international human rights law introduces the ethical element in the notion of governance, but still keeps it in the framework of the developmentalist model. In contradistinction to global economic organizations’ (WB, IMF, OECD) emphasis on the importance of governance in view of good development management, the UN places its accent on the political significance of governance in view of the citizen. In a recent document on the post-2015 UN development agenda, it is stated that governance refers to the exercise of political and administrative authority at all levels to manage a country’s affairs and comprises the mechanisms, processes and institutions, through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences” [85, p. 3]. Here governance is defined in connection to development but as quality of the political process in view of the UN’s shift towards the notion of human development. And through the notions of equity, transparency, participation, responsiveness, accountability, and the rule of law it is very often understood in the context of the quest for democratic governance. A recent

consequence of this ethical integration is the emergence of the “responsibility to protect”<sup>17</sup> doctrine in the discourse of the UN. It stipulates that if a sovereign national state fails to exercise its responsibility to protect its citizens (a failure of governance), the international community need to assume that responsibility and act to protect those people through collective action.

This is an important example for our own purposes since it demonstrates how within the evolution of the notion of governance an ethical element was assumed, which in its turn had led to the introduction of the responsibility concept. Transposed to the case of innovation governance, this raises the question if we could think about governance without addressing the question of responsibility with the help of ethics. This is a reminder for the purposes of RESPONSIBILITY as an attempt to provide the governance conditions for ethical reflexivity in research and innovation.

### 4.3 EU and governance

The European Union boasts as a unique political body, a peculiar institutional experiment, evolving over time with its specific ways of governing. One strand of the vast literature on the European Union recognizes this uniqueness in terms of governance and more specifically as a case of “governance without government”. The argument stipulates that the EU policy-making exhibits the following features: lack of traditional central authority, autonomous political actors other than states, new modes of coordination and negotiation (through **networks**):

“[t]he European Community (EC) is governed without government and therefore, it is bound to be governed in a particular way. (...) Europe’s supranational Community functions according to a logic different from that of the representative democracies of its members. Its purpose and institutional architecture are distinctive, promoting a particular mode of governance” [86, pp. 14-15].

Kohler Koch identifies four characteristics of this type of governance: the role of the central authority is that of mediator/activator of networks; governing is based on negotiation, not command; there is a blurring between the public and private spheres and there are multiple levels of decision making [86, pp. 25-26].

It seems that “a particular mode of governance” corresponds more with the original understanding of governance as a generic term describing different modes of governing in different realms of human practice and in different institutional environments (governance

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<sup>17</sup> The three pillars of the “Responsibility to protect”, as stipulated in the Outcome Document of the 2005 United Nations World Summit (A/RES/60/1, para. 138-140) and formulated in the Secretary-General's 2009 Report (A/63/677) on Implementing the Responsibility to Protect are: 1/The State carries the primary responsibility for protecting populations from genocide, war crimes, crimes against humanity and ethnic cleansing, and their incitement; 2/The international community has a responsibility to encourage and assist States in fulfilling this responsibility; 3/The international community has a responsibility to use appropriate diplomatic, humanitarian and other means to protect populations from these crimes. If a State is manifestly failing to protect its populations, the international community must be prepared to take collective action to protect populations, in accordance with the Charter of the United Nations [122].

of school, firm, organization, etc.). But within the actual evolution of the EU institutional arrangements, there could be detected various interpretations on the notion of governance.

During the 1990s the “governance” concept was used mainly in relation to the EU’s external affairs on developmental and third world countries issues within the notion of good governance. Later, when a new strategic direction was initiated by the Lisbon strategy and the need for economic reform recognized, the term “economic governance” gained relevance for denoting the necessary institutional restructuring in the EU framework so that economic performance is facilitated [87], especially in view of the EU enlargement. This is much in line with the neo-institutionalist approach on governance.

In 2001 was issued the first significant document devoted on the problem of governance – the White paper on European Governance which borrowed established principles of “good governance” from the international economic organizations: openness, participation, accountability, effectiveness, and coherence, to be at the heart of the reform of governing of the EU. This report was to pave the way for new modes of governance in view of the EU enlargement and deeper integration. Prior to it, in a Communication of the Commission to the European Parliament, “promoting new forms of European governance” was brought to the forefront of the European agenda as a strategic goal for the period 2000-2005. It is briefly defined as: “[g]iving people a greater say in the way Europe is run; making the institutions more effectively and transparently, notably by reforming the Commission and setting an example for other bodies; adapting the institutions to the need of enlargement; building new forms of partnership between the different levels of governance in Europe; and ensuring an active and distinctive European contribution to the development of global governance.” [88, p. 5] The rationale behind this governance turn in EU policy discourse is the need to come up with innovative governing practices in view of the challenges of the new century such as globalization, ageing population, the internet revolution, job creation and social inclusion.

One of the key issues identified with this respect is the connection with the citizens in shaping and implementing EU policies as a means to tackle with alienation and disenchantment with the European project. In the Communication mentioned above the involvement of the citizens is foreseen as giving voice to the civil society in order to ensure “proper **representation** of European social and economic diversity at European Union level” [88, p. 8]. Behind this is the general intuition that governance is “[a]bout the ways and means in which the divergent preferences of citizens are translated into effective policy choices, about how the plurality of societal interests are transformed into unitary action and the compliance of social actors is achieved.” [89, p. 1] Thus governance is not about imposing top-down solutions but about aggregating and transforming the plurality of individual preference into collectively binding solutions [86, p. 8]. This task becomes quite difficult in view of the new operating environment for authorities – globalization, interconnectedness, information overload, uncertainty, global risks, and differentiation.

In light of this sweeping change their governing capabilities need to be buttressed by other social actors, which could shed light on the various preferences, concerns and hopes of the public. And here the role of civil society organizations (CSOs) becomes crucial. Because in the realm of international relations, as well as in domestic governance issues they become recognized as the element which would alleviate the difficulties in the policy-making process in view of the adequacy of the solutions as well as the legitimacy of the proposed direction

of the regulatory effort. The problem is that relying on CSO actually reproduces the representation model which the governance paradigm seeks to overcome. CSO are believed to open channels of communicating interests, concerns and demands, alternative to the traditional party mediation for influencing policy outcomes. The danger is that only highly organized, influential and powerful civil society units will have access to the consultation mechanisms for participatory governance and that actual deliberative process will not actually take place not only because they could not exhaust all the public perspectives but also because the need for expedient decision-making does not leave room for actual deliberation, which requires time, transformation of the perspectives of the participants and mutual learning. That is why, for example in the effort to turn the Forum and Observatory of RESPONSIBILITY into space for deliberation process their sustainability in time needs to be guaranteed.

There is also another rationale behind the assigned importance of civil society involvement and that is the new situation of governing action based on the interaction of multiple players, thus forming horizontal structures instead of following rigid hierarchical modes of regulation and more effective problem-solving. And third, civil society formations are viewed as mechanisms for compensating the normative deficiencies in public life in times of crisis. They are assumed to have the potential to feed public dialogue and push for the integration of new values or causes at the heart of institutional arrangements and thus reinvigorate democracy. Thus the evolution undergone by the European governance model with its focus on CSOs is from initial consultations with experts and stakeholders, i.e. representatives of certain sectorial interests (pre-WPGE) to an understanding of the need for a broader civil society inclusion (with the WPGE), from a “partnership model” to a “participatory model” [90, p. 6]. But the justification of broader societal inclusion and even the enshrining of the principles of participatory and deliberative democracy in the provisions of the Lisbon Treaty (Art. 8, 11) does not solve the problem of the actual institutionalization of participation and ensuing its quality and meaningfulness. The issue is whether CSO involvement goes beyond mere knowledge collection strategies of the Commission and towards a genuine democratic participation [90, p. 13].

But this tendency to rely on the role of civil society for the justification of governance has also international flavour. In the matter of international relations and recent considerations of the possibility of global governance, the UN also has its contribution to the debate with the famous Cardoso report. It insists on the changing nature of multilateralism in IR in which key place needs to be given to nongovernmental actors in tackling global problems<sup>18</sup>. The voice of civil society needs to be harnessed, since national governments and traditional intergovernmental mechanisms of interaction seem to be inadequate in a situation of rapid globalization, complex systems, global risks, and emerging global opinion.

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<sup>18</sup> “[m]ultilateralism no longer concerns Governments alone but is now multifaceted, involving many constituencies; the United Nations must develop new skills to service this new way of working; (b) it must become an outward-looking or network organization, catalysing the relationships needed to get strong results and not letting the traditions of its formal processes be barriers; (c) it must strengthen global governance by advocating universality, inclusion, participation and accountability at all levels; and (d) it must engage more systematically with world public opinion to become more responsive, to help shape public attitudes and to bolster support for multilateralism”. See [123]

The efforts of the EC to embrace and introduce the particularities of these new forms of governance were backed by the work of the Forward Studies Unit (FSU), a think-tank unit in close collaboration with the Commission, which had significant impact on the theoretical framework behind the adoption of the concept of governance. Their work relied on the advances in the proceduralization of law strand of governance theory which accentuate on the broader understanding of the knowledge production context where norms are conceived, justified and applied as response to a major problem: **the crisis of contemporary regulation**<sup>19</sup>. Handling the deficit of democracy in EU is not a matter of reproducing the architecture of national institutions on a European level, but making the rule-production process to take into account the richness of all social, cultural and scientific sources of knowledge. The knowledge production behind the norm construction has changed. Substantive rationality is not perceived as adequate any more (it focuses only on results and refers to the success or the failure of an action to achieve some ultimate objective – justice, equality, etc.). The situation requires procedural forms of governance which would compensate for the deficits of current consultation mechanisms, favouring sectorial perspectives and top-down approaches of legislation [91]. The FSU model of proceduralisation “tries to combine normative and cognitive components in a prospect of an experimenting, flexible self-organising society. It regards procedures explicitly as **generating new knowledge, new options and new models** as a functional equivalent of the link between abstract general rules, and experience as a public knowledge base of a society of individuals [91, p. 69]. Focusing on the erroneous for them assumption that institutions have the necessary cognitive and material resources to effectively solve problems, they advocate for a more adequate way of norm-production – through procedures which would ensure the participation if all affected thus ensuring the responsiveness, flexibility and legitimacy of the policies elaborated, as well as freeing the institutions from the constrains of substantive rationality. According to them, this impetus for more open decision-making process (through consultations, citizens’ juries, public hearings, focus groups, etc.) through involvement and transparency would help public bodies to formulate and implement more adequate policies (elicited by a more adequate knowledge-creation process in the context of complex, uncertain and highly differentiated societies). In a way, this begs for a certain degree of liquidity (to borrow the metaphor from Bauman) of the institutional arrangements so that the complex society confronted with uncertainty turn into an “experimental society, restructuring its institutions in the sense of a reshaping of incentives for learning and adaptation” [91, p. 68].

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<sup>19</sup> “Traditional forms of regulation are currently in crisis. This crisis is also a political crisis, since it finds expression in widespread skepticism about the ability of our societies to modify themselves and thus alter their own historical course. However, the crisis is not related to a given regulatory model, such as the substantive law of the welfare state or the formal law of the liberal State; rather it is a crisis affecting the very idea of a model, i.e. the idea that governance is to be understood in terms of applying a method, in differing environments and despite such differences. Seen this way, the political crisis is merely the symptom of a deeper crisis in formal (or, more precisely, substantive) rationality and its presuppositions, namely that phenomena obey laws, that we can update these laws, and that, thanks to the accumulation and processing of information, we can use our knowledge to act effectively” [91, p. 18].

These findings are at the heart of the White paper on Governance in Europe (2001). The key challenge of bridging the gap between the citizen and Europe is approached as a matter of moving towards the following directions:

1. Improving the opportunities for and quality of public debate on European issues;
2. Improving the transparency and openness of European policy making;
3. Redressing material and cognitive inequalities;
4. Opening up the process of expert and bureaucratic decision-making;
5. Supporting collective learning;
6. Developing collective evaluation and revision of policies;
7. Achieving policy coherence;
8. Enhanced vertical and horizontal articulation in the policy process [25, pp. 293-297].

It must be noted that neither the report, nor the WPGE address the notion of governance itself. They presuppose that it is equivalent of reformed art of governing needed to handle the crisis of traditional regulatory regimes. It seeks for new forms/modes of governance as innovative policy-making solutions to address the aforementioned specific problems in view of bridging the gap between the EU with its citizens. This governance turn in the EU policy-making is a result of serious debates, initiated in the European academic circles and the FSU with the aim to inform the European Commission on the necessary directions for reform and institutional change in view of what is perceived as transformation of the modes of governance in democratic societies. In a previous policy paper, devoted to the issue, it is being stated that this critical situation which needs appropriate response is a result of both the transformation in the capabilities of government at the national level and the emergence of new forms of governance transcending the traditional territorial limits in response to changing circumstances.

What is interesting is that governance is not understood as the necessary changes in the regulatory capacity but as an ongoing evolution of the forms by which issues of complexity, diversity, interconnectedness and uncertainty are being addressed. The problem for the authors is not the emergence of those forms but how could their potential be harnessed so that effectiveness and accountability, which are deficient in the current regulation schemas [92, p. 7], be ensured within contemporary representative democracies. What is changing is the underlying rationality behind the evolution of the art of governing and the transitions from formal to substantive to procedural rationality<sup>20</sup>. All those transitions reflect the way norms are being conceived, justified and applied. In the first case, the state is perceived as a provider of a neutral legal framework, within which individuals interact (market regulation, contractual interactions). In the second case, the state is perceived as a provider of grand societal goals (e.g. social justice, equality, etc.).

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<sup>20</sup> “The rationality underpinning the classical liberal state can be described as *formal* with the state providing a legal framework within which individuals could contract freely. The welfare state, by contrast, has been characterized by *substantive* rationality. Here the state has intervened in ever more areas of social life to correct the market failures of the liberal state, to guarantee minimum standards of living, to protect workers and consumers and so on. This intervention has proceeded on the basis that the organs of government have the cognitive and material resources and abilities to understand and resolve the problems of society - in other words, that public actors can define problems, determine their scope, formulate modes of action, implement them and achieve predicted desired results.” [92, p. 13]

The transition towards procedural rationality is powered by doubts both in the market and its price mechanism as the perfect distributor of information, and in the welfare state as a knowledgeable agent with regard to societal needs, social processes and policy outcomes. Behind the appeal for procedural rationality is the recognition of the need to organize the policy-making process/the rule elaboration process as a knowledge-generation mechanism *per se*<sup>21</sup>, continually open to the possibility of collective learning. This denotes also a transition from regulatory act imposing rules to an *open regulation process* “which in its attempt to involve and engage the resources of all affected actors at all stages can have profound effects on both accountability and effectiveness” [92, p. 15]<sup>22</sup>. Public authorities are perceived as enactors of those conditions, of promoters and managers of the initiatives that will bring together the stakeholders into a horizontal and meaningful interaction. Given that, it is not a surprise that the EC understands governance as promoting the necessary institutional changes in order to allow the needed interactions, as encouraging new regulatory modes.

Key characteristic of the procedural modes of governance is ensuring **participation**. In order to be meaningful this collective involvement of the stakeholders needs to be materially and cognitively procured so that inequality of perspectives is avoided and collective learning ensured. In the later paper of 2001 the provision of cognitive resources is envisioned as highly reliant on the information technologies which might provide the infrastructure for better knowledge-creation process in the norm-construction (which is also the case of RESPONSIBILITY with its Forum and Observatory). The danger in this assigning of the public actor the responsibility for regulating the collective learning process is not to be boiled down to traditional consultation practices, expertise domination, exploitation of the notion of societal dialogue for the purposes of legitimization of unpopular measures.

Apart from participation, the rest key components in the regulation of the collective learning process by the public actor (in this case the EC) identified in the first assessment are: transcending segmentation (sectorial perspectives, functional diversity), contextualized implementation, reflexivity (understood as mechanisms which could accommodate new stakeholders, information and problems in the production and application of norms), co-ordinating network of actors. This logic, implied in the five principles outlined in the WPGE, besides being in line with the proceduralization of law, is very much relevant with the concerns of the systems theory and cybernetics’ imprint on governance theory. The insistence on transparency and participation is actually a precondition to ensure a flow of information and adequate feedback to guarantee the stability of the system, not the

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<sup>21</sup> And even “to ensure that democracy genuinely becomes a process of knowledge production by and with those for whom that knowledge is deployed to serve and equally involving those actors in its deployment, the basic parliamentary legitimacy and the effectiveness of government action can thus be reinforced by proceduralisation in the form of the contextualisation of the production and application of norms.” [92, p. 15]

<sup>22</sup> “A consequence of these transformations in modes of governance is that it no longer seems appropriate to speak of a regulatory chain because there is no longer a unilinear chain of events making up the process of regulation. Rather there is a regulatory process which inherently involves feedback loops which reintegrate new information about the regulatory context into the process of formulating and applying rules. Procedural modes of governance understood as such systems clearly offer improved flexibility and adaptability over traditional regulatory forms.” [92, p. 20]

achievement of grand societal goals. That is why openness, participation, accountability, effectiveness, and coherence are core for ensuring the communication between the parts of the system. It is the reason why also, communication has turned into the answer of all governance challenges.

Nevertheless, it seems **not to be the solution**. That is why for RESPONSIBILITY and the construction of the Forum and the Observatory, it is necessary to keep in mind the importance not to restrict their role to communication and repository functions, which means that the significance of the project cannot be boiled down to its technical aspects. All the challenges that accompany the European proceduralist search for addressing the participation/deliberation tension are also relevant for RESPONSIBILITY. The mere existence of the project is a manifestation of the transition to procedural rationality in European governance which aims to overcome the shortcomings of traditional regulatory mechanisms by promoting a horizontal knowledge-generation process, open for various societal actors while engaging them in collective learning.

It must be noted, however, that recognizing the need for novel governance models does not solve the problem of the actual implementation of RRI. As it will be shown in the next chapter, the availability of an institutional framing and operationalization of RRI to six key aspects of implementation does not provide answers as to what would be the concrete procedural conditions that would allow the intended responsible governance of innovation.

## 5 RRI: The Institutional Framing

The overviewed conceptualizations on RRI (chapter 3) go hand in hand with efforts within the EC to translate those in tangible institutional directions. The chapter that follows will bring back the focus on the notion of RRI but this time will concentrate on the European Commission's understanding on RRI, promoted through the Horizon 2020 programme. This part of the text will demonstrate that the notion of RRI is in a peculiar situation, in which on the one hand the theoretical developments do not address the conditions of its implementation; on the other, EU's institutional response consists in instructions for implementation of RRI which do not step on in-depth conceptualizations on the governance arrangements (procedural solutions) that will allow this same implementation. This angle of analysis is important for RESPONSIBILITY, because the project could provide a procedural space (through the Forum and the Observatory) where the outlined discrepancy be continuously addressed.

### 5.1 The six “key” elements of RRI implementation

The current section is devoted to the six “key” elements of the European Commission's perspective on the issue of RRI implementation. As it will be seen, the latter accentuates on the public's involvement in the process of research and innovation and place ethics as a separate (not overarching) aspect of that same process.

But before going into details with the six keys, it deserves to be noted with regard to the emergence of the notion of RRI that some of the discussed authors in section 3.2 either are or were in one way or another involved in the work of the Commission<sup>23</sup>. This ensured some institutional uptake and room to advance the RRI agenda in the context of the recognized necessity to steer the innovation process towards societal needs, as has been underlined in key documents introducing this intention such as the Europe 2020 strategy (2010), the Horizon 2020 framework programme proposal (2011) [93], the Lund Declaration (2009), as well as the Council conclusions on the Social Dimension of the European Research Area (2010) [94].

The institutionalization of RRI comes only with the Horizon 2020 programme in which it is justified as “[a]n 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” [95]. It aims at novel governance arrangements for research and innovation (R&I) that would enable societal actors' collaboration (researchers, citizens, policy makers, business, third sector organizations, etc.) and a different temporality of their interaction (during the whole research and innovation process). This marks two fundamental changes of the way R&I governance is perceived. First, as one open for wide participation, which will enable various specialist and non-specialist perspectives in a dialogical mode of interaction (various sources of normativity and good flow of information from the environment). Second, it even goes a step further – it implies the need for R&I governance as knowledge-creation process which will aim to “better **align** both the process and its outcomes with the values, needs and expectations of society” [95]. The rationale behind that is to achieve a reformed governance process in which a variety of stakeholders is engaged (multi-actor), public engagement is guaranteed in

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<sup>23</sup> Rene von Schomberg, Richard Owen and Jack Stilgoe are cases in point.

a co-creation process and a new mode of temporality is set (different from the usual post-factum assessment, risk-analysis and regulation).

RRI is a cross-cutting issue in Horizon 2020 programme and is integrated through the activities concurring with the “Science with and for Society” objective of the programme. The thorny question of the actual implementation of the RRI, which has been at the heart of numerous concerns in the RRI literature, is approached through promoting actions in what the EC has defined so far as key thematic elements of RRI (namely public engagement, open access, gender, ethics, science education) under the auspices of governance (which the EC in this case sees as “integrated actions that for example promote institutional change, to foster the uptake of the RRI approach by stakeholders and institutions” [95]. Here governance is understood as the process of enabling (incentives, institutional arrangements, etc.) the other five key elements of RRI. In some documents it is even referred to as a separate “umbrella” key [23].

Given that, we need to pay closer attention to every single of those six elements. Below are provided the Commission’s interpretations on each of them.

### **5.1.1 Public engagement**

Public engagement (PE) in Responsible Research and Innovation (RRI) is about “co-creating the future with citizens and civil society organizations, and also bringing on board the widest possible diversity of actors that would not normally interact with each other, on matters of science and technology.” [96]

Public engagement implies:

- the establishment of iterative and inclusive participatory multi-actor dialogues between researchers, policy makers, industry and civil society organizations, NGOs, and citizens;
- to foster mutual understanding and co-create research and innovation outcomes and policy agendas effective in tackling societal challenges, and
- fostering wider acceptability of results.

### **5.1.2 Open science**

Behind the idea of open science for responsible research and innovation is the need to make the results of publicly funded research projects accessible and transparent. The rationale behind this is twofold: first, to avoid cases of problematic innovation and public discontent; secondly, to allow for better circulation of information and knowledge between research actors in order to foster further research and innovation (use and re-use of research). The aim is not only on avoid duplicity of research but also to provide innovation dynamics for the private sector (SME-s which do not have developed R&D structures), and inform the concerned public with the latest developments of publicly-funded research in order to express their concerns [97].

### **5.1.3 Gender equality**

This aspect of RRI aims to tackle with the underrepresentation of women twofold: as targeting more equal participation of women in the R&I field; by addressing gender issues in R&I itself. As it could be seen the importance of this key is with anti-discrimination flavor in both S&T making and in aligning research interests with gender concerns so to avoid

distortion of perspectives (reproduced through the male/female dichotomy), in other words to allow for gender-sensitive or gender-relevant production of knowledge [98].

#### 5.1.4 Science education

This key aspect of RRI is more in line with the earliest attempts to structure a dialogue between the scientific community and the public with incentives for boosting the science literacy of the citizens in order to overcome the mistrust between them. Another reason for this endeavour is the need to ensure a science-oriented generation with interests in research and innovation to procure the innovation dimension of the European project for the decades to come. In that respect one of the expected impacts is to “Develop scientific citizenship by promoting innovative pedagogies in science education, attracting more young people towards science, with a special emphasis on girls, and addressing the challenges faced by young people, in pursuing careers in science, technology, engineering and innovation” [99].

#### 5.1.5 Ethics

Ethics is understood as a key aspect of RRI and its implementation through adherence to fundamental ethical principles (e.g. not causing harm, treating with respect, obtaining informed consent, etc.) and national, EU and international legislation (e.g. Charter of Fundamental Rights of the European Union and the European Convention on Human Rights.). There is recognition that ethics needs to be part of research from the beginning to its end, which is telling for an attempt reconsidering the temporality of ethical assessments. The aim is to avoid identifying the problematic moments when it is too late. Still, the ethical review process rarely goes beyond a check-list of sensitive issues that need to be paid attention such as: the involvement of children, patients, vulnerable populations; the use of human embryonic stem cells; privacy and data protection issues; research on animals and non-human primates. Thus ethics in RRI implementation is mainly about legal compliance and researchers’ integrity. The latter consists of first, making sure that researchers follow professional standards of doing research-avoiding fabrication, falsification, plagiarism or other misconduct; and second, combatting ethical dumping<sup>24</sup> - i.e. evading the problem of ethics through exportation of non-compliant research practices beyond EU borders. The overall aim of adhering to the ethics key is not only avoiding legal controversy but also boosting the societal relevance and acceptability of research and innovation.

In a way the institutional interpretation of all those aspects of RRI implementation are filtered through the notion of responsibility – responsibility to the public and of the public (Science with and for society), responsibility to address knowledge asymmetries, gender discrimination, responsibility to ensure next generations’ imprint in R&I, responsibility to comply with legal norms and ethical principles; public officials’ “responsibility to prevent harmful or unethical developments in research and innovation” [23] and push for the integration of those 5 key elements through governance. It is important to be recognized that although the EC insists on the integrated application of those RRI aspects, the first one – public engagement is present as an underlying consideration in one way or another through

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<sup>24</sup>Due to the progressive globalization of research activities, the risk is higher that research with sensitive ethical issues is conducted by European organizations outside the EU in a way that would not be accepted in Europe from an ethical point of view [124].

all the rest, which are means to bridge the gap between the scientific community and society on matters of R&I governance.

One of the problems with the Commission's approach to RRI is that it gives instruction for implementation without providing the well justified conceptual foundation of RRI. At the same time, ethics has been regarded as one of the keys and is interpreted in line of the conventional understanding of research ethics (legal compliance plus research integrity). A very plausible risk stemming from this change of the position of ethics as one among other aspects is not only the obscuring but actually the loss of a normative horizon in the governance of research and innovation. In comparison with the EU institutional "compartmentalization" of RRI by restricting it to six key elements, the theoretical realm provides more room for interpretation of the place of ethical reflexivity in research projects and a chance ethics to be conceptualized as the umbrella under which the governance of R&I could be realized. Therefore, the Forum and the Observatory in RESPONSIBILITY are a procedural opportunity for addressing those issues.

## 5.2 Open innovation, open science, open to the world

With the advent of the new Juncker EC and in line with the new priorities towards innovation-driven growth and single digital market, the focus has been shifted more on the issue of openness of R&I. "Open innovation, open science, open to the world" sets a new development in RRI governance – one which is more oriented towards the market realization of research results and innovation products. It was recently announced by the Commissioner for Research, Science and Innovation, Carlos Moedas, as the new direction of the ambitions in view of the innovation promise of the European project [100]. It is presented as deepening the efforts to open up the innovation process for more actors to actually benefit from it (i.e. the efficiency and effectiveness of innovation governance), esp. SMEs and shortening the time between the inception (through collaboration, participation, user involvement) and the realization of innovation (commercialization, global partnerships, etc.). For that end, the digitalization of ERA, new funding opportunities and enforced presence in the global science and innovation dialogue are to be encouraged.

This approach is a step back to neo-institutionalist economics considerations and eliciting measures for better market performance. Very often those cases of emerging technologies present themselves as occasions for considering the problem of global governance of science. One of the concerns of the EC, along with the difficulty of elaborating institutional arrangements for responsible governance of innovation, is the need to transfer those same on an international level. Being aware of the globalization process in science with its positive (joint scientific projects) and negative (ethics free-zones, global scientific inequalities) effects and recognizing the need to establish itself as a leading global player in the field of innovation (while adhering to the EU-protected values inscribed in documents such as the EU Charter of fundamental rights), the EC has elaborated more on the feasibility of global governance of science influenced by those same values and being respectful of other cultures' ones. It must be clarified that the adopted understanding of science is actually close to that of innovation in the sense that science nowadays is not limited to the independent curiosity-led inquiry for revealing truths but implies acquiring an understanding for the world as a capacity to act. It is acknowledged that scientific knowledge is not by itself and for itself, but one that enables social change and interventions towards alternative paths. The term global governance is chosen in contradistinction to international governance to emphasis on the fact that a variety of non-state actors have their place in a variety of

levels (local, regional, national, supranational) of that process. The quest for global governance of science entails rethinking what constitutes good science, but also the changed relationship with society in a globalized world. A report [101] on the matter explicitly pinpoints the deficits of the public understanding of science (PUS) approach (communication) and advocates for deliberation structures in which local and indigenous knowledge will interact with decontextualized codified knowledge. It recognizes however the vagueness in view of what global deliberative governance might look like. What is clear in the report is the need for new structures for ethical governance of science in a global level: “Global governance needs to aim at agreeing and harmonizing general ethical principles, stamping out ethics free zones that still remain. But it must also take into account local cultures, religions and traditions as a vital part of the necessary dialogue. This dialogue should take an approach of reconciliation, building capacity for the management of tensions and conflicts that are an inevitable part of collaborative global science.” [101, p. 36]. It must be noted, though that lack of clarity as to those deliberation structures that would allow ethical governance of science on a global level is one of the reasons why the new Open Innovation, Open Science, Open to the World does not reflect those and concentrates only on the “society of science” part of the problem. Given that, for RESPONSIBILITY will be important to stretch its coordination effort beyond the scientific community or the RRI epistemic community in particular. It must be noted that its initial ambition to provide a space for bridging the research and innovation field with the policy-making world and spur RRI discussion on a global scale, is in line with the directions set in the report on the Global Governance of Science, namely “to explore different processes of governance, ethics and public deliberation to see what we might exchange, import or export. We need to develop networks which allow policymakers and scientists in Europe to forge common purpose and alliances on these issues with their counterparts in emerging economies.” [101, p. 38]

Despite the problems it raises, this all is part of the efforts to turn innovation governance into a democratic knowledge-creation process in which the interaction between different levels and stakeholders could take place. Therefore, the next section of the chapter will concentrate on the existing innovation governance models and will attempt to put RESPONSIBILITY in the light of their advantages and shortcomings.

### **5.3 Innovation governance as democratic knowledge-creation process**

We have already analysed some of the reasons of the European political push for a new mode of interaction between S&T and the public. The crisis in their relations is manifested on various levels – from matters of trust in science to the democratic deficits in contemporary policy-making.

In order to address those problems, the European institutional response in one way or another has three main directions:

1. finding ways to ensure citizen participation in the governance of science and innovation (consultations, public debates, citizen juries, citizen panels, etc. for enriching the scientists’ perspective with what was previously considered as non-relevant information. Today, through recognizing the value of local, indigenous and tacit knowledge, those outsiders’ perspectives have their place in the overall knowledge-generation process;
2. better communication of scientific results (esp. through media) for addressing the issues of trust by improved public understanding of science and opening the policy-making field for the produced research results;

3. fostering inter-expertize dialogue through interdisciplinary cooperation. This is manifested by attempts to integrate the social sciences and humanities in “hard science” initiatives (e.g. establishing compulsory ethical review processes for new technologies projects).

It must be recognized, however, that those directions came not only from developments in the governance theory or the RRI field. The search for new modes of interaction between science and society has been also initiated in other social sciences and humanities (SSH) research on the changing nature of the knowledge-creation process. For example, the concept for Mode-2 knowledge creation process advanced by Novotny and Gibbons problematizes the issue through the notion of social contract and argues the need of a new one between science and society: ‘a new contract will require more **open**, socially distributed, self-organizing systems of knowledge production that generate their own accountability and audit systems. Under the prevailing contract, science was left to make discoveries and then make them available to society. A new contract will be based upon the **joint production** of knowledge by society and science.’[emphasis added] [102]. In the account of Funtowicz and Ravetz it is described as post-normal science - a knowledge creation process in a new situation where “facts are uncertain, values in dispute, stakes high and decisions urgent” [103, p. 744]. They advance the idea for the appropriateness of “extended peer communities” which involve legitimate stakeholders beyond the immediate research community in a dialogue (which will allow local knowledge and hidden facts to emerge) with the aim of democratization of science and a response to the condition of post-modernity [103, p. 744]. John Ziman contributed to these efforts to rationalize the situation by introducing another term to depict it – “post-academic” science. All those intellectual attitudes are reflected in institutional responses for more open and democratic knowledge-creation process where not only inter-disciplinarity but trans-disciplinarity has a very important role. Thus, for example, preserving and integrating local and indigenous knowledge in the knowledge creation process is being viewed as key for advancing the political agenda for building contemporary knowledge societies [104].

With reference to RRI, as a search for the suitable governance arrangements in the field of research and innovation by allowing a more democratic knowledge-creation process, it must be acknowledged that it is burdened with the following challenges:

- First, it needs to pay attention on the conditions that would allow to bring together multiple societal voices and to engage them in a democratic knowledge creation process establishing the possibility for collective action. This implies the search for as broadest representation as possible of variety of normative sets and differences.
- Secondly, in order to be democratic, it needs not to exclude certain sources of knowledge (or expertize perspectives). Multi-disciplinarity helps to gather all what could be considered as relevant information so that important aspects of an issue (or emerging problems) could be properly addressed.
- Thirdly, an important component of creating the conditions for a democratic knowledge-creation process is contesting the dominant perception for the inherent superiority of codified scientific knowledge by opening room for trans-disciplinary dialogue. This means that in the process of innovation governance the under-privileged perspective of the layperson or the regular citizen has its place and is as valuable source of knowledge as that of the specialist. In order to ensure the substantive and not only the procedural aspect of the democratic knowledge-creation process, we need to ensure *the commitment* with its results, which is

actually at the heart of a positive understanding of power (as ability to act and introduce change into the world).

This represents a relevant direction for RESPONSIBILITY, which with the construction of the Observatory and the Forum, needs to address all those concerns and aim at enacting a democratic knowledge-creation process with regard to the conceptual development and the implementation conditions of RRI. It allows for bringing together different societal perspectives in “dynamic coalitions” of stakeholders, nurtures the collection of multidisciplinary expertise knowledge (through the Observatory), promotes transdisciplinary interaction (through the Forum) and has the potential to be an empowering tool if the outcomes of the interactions which have taken place in it and the knowledge created that way enters reality and influences concrete practices and initiatives for RRI. However, the challenge before RESPONSIBILITY as an attempt for innovation governance as a more democratic knowledge creation process is how to be ensured the commitment of the participants with the norm they have produced.

In the context of the science-society dialogue, there are several common modes of interaction, none of which is providing a clear solution of this problem but are yet trying to address the aforementioned requirements for democratic governance of innovation. Pierre-Benoit Joly has summarized those models as: standard, consultation, revised standard, co-construction [105].

The **Standard model** implies asymmetric mode of interaction between scientists and the public, based on the presumed superiority of expert knowledge. Thus, the source of normativity is codified knowledge while the concerns of the public are perceived as resultant from the lack of scientific training. The ignorance of the public manifests not only in scientific illiteracy but also in “irrational” (in view of scientific truth) arguments due to cognitive biases, risk-aversion stances, unsubstantiated fears due to lack of comprehension of technicalities or exaggeration of dangers. This model implies domination of objective scientific truths (facts) over subjective and distorted interpretations of those facts. In this model values seem to be irrelevant source of normativity. The assumed neutrality of codified knowledge is the only revered point of departure in policy-making (evidence-based policy). Therefore the public is seen only as a subject of instruction (top-down approach) and education (better communication of risks and benefits).

The **Consultation model** is not so focused on knowledge asymmetries but on bridging the differences in the perception of risk between the public and the experts. What is really important in this model is the assumed equality in the validity of the views on risk those two parties provide. Whereas the Standard model implies clearer and even corrective one-way communication of risk from the specialist to the public, the Consultation model opens the room for two-way interaction due to the changed nature of risks and the need to pay particular attention on the *management* of blind risks. Nevertheless, it reaffirms the dominance of the scientific community in the *definition* of risks. The participation of the public could be used as a source of legitimacy for regulatory efforts. The need of the public to be involved is justified in the new nature of risks and the fact that the technical assessment of risks could not encompass the actual exposure to those risks.

The **Revised Standard Model** is more concentrated on the problem of the social construction of risk. If in the Consultation model the public is seen as a source of information for better management of blind risks, in this model it is regarded as a source of distorted perceptions of risk (usually fed by media apocalyptic accounts), which in their turn enable

what Breyer calls a “vicious circle of risk regulation”. Given the failure of the Standard model with its focus on educating the public and communicating “objective” assessments of risks, the Revised Standard model attempts to answer to concern that regulatory bodies will exaggerate the risks themselves to adjust to public expectations. The unfortunate result will be inconsistent law-making (following the moment fears and whims of the public), the public will feel unprotected by the law, which in its turn will lead to more political pressure for initiating actions. In this model the focus is more on the process of management of risk by competent and independent bodies which will avoid the distortion of risk (in the interaction between decision-makers, media and the public). It reproduces a technocratic vision in the management of risk. It implies reliance on independent scientific expertise to avoid industrial lobbying, polarization of public opinion and groups of interest. This, however, is still a top-down approach which leaves public stakeholders out of the decision-making process.

The **Co-construction Model** questions the way experts are used in technology development projects. It steps on the sociology of science’s critique on the traditional perception of science as revealing universal and independent from the context truths and follow the work of Bruno Latour by placing the analysis of risks into a pragmatic perspective. This model takes into account both facts and values not only because of the democratic significance of such an act, but also to provide analytical rigor and allow criticizing and validating the framing and engaging into a debate on what might eventually be changed. The Co-construction model requires participatory approach in the spirit of the “weak proceduralism” of Latour.

These four models illustrate the main existing modes of interaction between science and the public. Although they refer to risk assessment methodologies, they are relevant as underlying assumptions in current S&T governance. In one way or another they (singlehandedly or in combinations) are employed in contemporary research and development as strategies for norm construction. As such they all represent a specific conception of the relationship with the norm and the underlying preconceptions on the relation to the context.

In the table below it could be seen how each of these models conceives the relationship with the context in the construction of the norm.

**Table 5.1: Relation between norms and context<sup>25</sup>**

Relation to the norm	Governance Typology	
	Efficiency	Participatory
Contextualized	Revised Standard	Co-construction
Decontextualized	Standard	Consultation

As it could be seen, the Standard and the Revised Standard models aim at efficiency, whereas the Consultation and the Co-construction models – at participation. What is interesting is the tension between the efficiency and the participation aspect of governance. Introducing participatory structures is a very demanding endeavour, but aiming at horizontal participatory structures (the Co-construction model) represents a real challenge.

<sup>25</sup> Source: GREAT Deliverable 2.3. Analytical Grid Report to EC [125, p. 82]

It could be seen that those models present various deficits and fail to address the tension between participation and deliberation. They either concentrate on better communication of scientific truth to the public or perceive the public as a source of relevant information and not as a coequal actor in the process of governance of risk. The Consultation and the Co-construction models have their participatory aspects but still that does not ensure a deliberative “substance” of the interaction. Needless to remind, three of the four models imply a top-down approach.

As to RESPONSIBILITY, it strives to avoid the traps of the standard and the consultation model, and use the advantages of the revised standard and the co-construction model. It establishes participatory structures which would allow a more horizontal interaction between various societal actors through the RRI Caucus while at the same time aims at efficiency in elaborating contextualized solutions. The RRI Caucus is the core two-step modality of the RESPONSIBILITY Forum. The first step is the so-called Dynamic coalition, where RRI tools (like guidelines, training materials, Code of Conduct, etc.) and future scenarios for research or innovation topics will be prepared by expert stakeholders to inform the process. Then in an Innovation Café (step 2) those materials will be discussed with a broader audience of expert and lay stakeholders to gather opinions and to make recommendations on how to proceed with the research or innovation at stake. This structure attempts at addressing the efficacy paradox (see section 4.1) and reconcile the efficiency and the participatory consideration in the governance of innovation by combining elements of the revised standard and the co-construction model. It relies on expert knowledge but in constant interaction with interested representatives of the public. Nevertheless, as every initiative for more democratic knowledge-generation process, the availability of the participatory structures is not a guarantee that a meaningful deliberation will take place. And this is a major risk for the project.

Another important issue that need to be taken into account touches on the thorny question of how to incorporate the application of the norm in the construction of the norm itself. It is clear that stating the reasonableness of a norm and reaching collective agreement on that is not sufficient for guaranteeing its contextual application as an act of free choice. For RESPONSIBILITY this means that using the Observatory and the Forum (through the Caucus process) for intensive interaction between various stakeholders and reaching common positions (on scenarios, guidelines, training materials, etc.) is not sufficient. The real significance of the project consists in securing the engagement with those, in ensuring the contextual application. Put briefly, the ambition of RESPONSIBILITY is to create the conditions for the important transition from virtual discussion to reality.

That being noted, the conclusion, that follows, will comment on the implications for RESPONSIBILITY as a project. It will also point at the way forward by underlining the opportunity RESPONSIBILITY has to address limitations of the “classical” procedural approaches and open room for exploring an enriched procedural solution, namely, the one provided by the so-called comprehensive proceduralism.

## 6 Conclusion: Implications for RESPONSIBILITY

The overall aim of this deliverable was not only to make an overview of the theoretical developments with regard to the notion of RRI, to identify some discrepancies and raise alert on the problems. It was to build an argument for the need of a procedural space where all those could be addressed. What is more, it was to demonstrate the potential of RESPONSIBILITY to provide such procedural space. This is the reason why the content of the text was not organized as the usual RRI theoretical landscapes, which very often are structured around the discussions on innovation, on the precursors of RRI (Technology assessment, Corporate social responsibility, etc.), and the definitions of RRI. Instead, in order to justify the existence and explore the potential of RESPONSIBILITY with regard to the further development of RRI (both conceptual and in view of implementation), we examined the achievements and the shortcomings of the latter through the lens of the problem of governance. It is very important, since the overall goal of the theoretical and application advancement of RRI is inextricably connected with the problem of the institutional arrangements that would create the conditions for such advancement. And that is a question of governance.

All the findings of the current deliverable also have to do with the role of the Forum and the Observatory. As the text shows, it is insufficient for them to be regarded only as a technical challenge, as an electronic architecture to build and continuously run. They come as an expression of theoretically-justified considerations with regard to the weaknesses of the RRI theories and practice. In fact, they are an attempt to answer a peculiar situation in which the existing RRI accounts do not address the issue of implementation. Simultaneously, the institutional (EC's) RRI implementation instructions do not provide conceptual foundation of a procedural solution that would create the conditions for a more democratic knowledge-creation process which will "better align both the process and its outcomes with the values, needs and expectations of society" [106].

In view of that the function of the Observatory should not be restricted to a randomly populated repository of RRI-related texts. Its potential as a procedural means of advancing RRI is in being: a monitoring mechanisms with regard to the evolution of the RRI field – to identify trends and raise alerts. At the same time, it functions as a recording mechanism with regard to those same developments and as a result of those tasks to propose directions (e.g. guidelines, scenarios, governance arrangements for emerging technologies). That is why the Observatory is not merely a knowledge collection space (case studies, RRI concepts, reports, articles, etc.) but a knowledge-generation one, which on the basis of observation of the innovation environment constructs possible modes of response to the identified developments. In the same vain, the Forum is not just a regular online communication space or an opinion-gathering tool. Its ambition is rather to enact a democratic knowledge creation process through multi-stakeholder deliberation on issues identified by those actors (through the RRI Caucus Suggestion Board and the Open Space).

Along with that the text demonstrated several very important developments which have implications for RESPONSIBILITY.

First, opening up the governance of European research for various societal actors is vital. Although it starts as an insistence for a closer relations between science and the industry, the evolution of the EFP illustrates that this understanding has evolved and as of now puts the emphasis on the involvement of the citizens so that research and innovation can be

tailored to societally desirable and ethically acceptable ends. RRI emerges as a manifestation of those developments and as a proposition for a novel form of governance of S&T.

Second, the mode of interaction between science and society in the governance of research and innovation has evolved from public understanding of science (PUS) to public engagement in science (PES). This means that there has been a shift in the perceived institutional arrangements that would allow a meaningful dialogue between the research community and the general public, a shift from communication efforts (to explain science to the public) to actual engagement in the knowledge-creation process. The notion of RRI is in line with this understanding; what is more, it turned into a means to advance it (“public engagement” is one of the six “key” elements of the European Commission’s recipe for implementation of RRI).

Third, the theoretical developments with regard to the notion of RRI advance various normative accents in reconsidering the governance of S&T – anticipation, transparency, responsiveness, reflexivity, collective/inclusive/interactive (see Great theoretical landscape). They, however, do not address the pressing question of the conditions of RRI implementation which pertains to the institutional arrangements that would allow the abovementioned features to be realized in the science-society interaction. On the other hand, the “compartmentalized” perspective, advanced by the European Commission (the six key elements of RRI) neither relies on stringent conceptual foundation nor provides procedural solutions for implementation (although proceduralist scholarship on governance was available - see chapter 4).

The RRI implementation challenge, including for RESPONSIBILITY, is actually a governance challenge. It concerns finding the appropriate governance arrangements that would allow:

- a horizontal process of knowledge-creation between various societal actors that does not reproduce the usual consultation/instruction modes of interaction and finds the source of normativity within the norm-construction process itself;
- second-order reflexivity - reflexivity which will examine not only what is perceived as an external knowledgeable context but also the inner cognitive context which produces certain framings/conceptual closures on what is constructed as external context; what is more, a second-order reflexivity which also problematizes the institutional arrangements that allow or advance certain reflexivity, especially on the matters of innovation governance and ethics (see footnote 14, p.49).
- reconciling participation and efficacy, i.e. ensuring that the imperative for multi-stakeholder engagement does not impede the process of elaborating a common normative horizon out of the variety of societal perspectives, values and interests;
- ensuring a participatory structure which does not reproduce power asymmetries or privilege knowledge domination but aims at allowing deliberation and continuing engagement of the participants in the inception, application and renegotiation of the solutions they elaborate;
- reconsidering the status of ethics (in relation to governance) as the *process* of incepting normativity while avoiding hierarchical structures of interaction in which the emerging shared normative horizons will take into account the contextual application of the norm. This requires rethinking the usual perceptions on ethics as an act of imposing rules or

demanding compliance with de-contextualized (universal, ensuing from a transcending authority – reason, deity, etc.) norms, as separate component (one key) of RRI implementation or as an innovation-averse censor of S&T development.

Both the Forum and the Observatory come first as a response to the limits of the usual procedural approaches, which very often cannot solve all of the abovementioned problems and particularly the problem of how to take into account the application of the norm in the norm itself. “Classical” proceduralism (Habermas, Rawls) puts its accent either on the legitimacy of the procedures which lead to the construction of the norm or on their rational justification as sufficient for their acceptability. As we have shown in this text, setting a participatory structure, agreeing on a certain procedure of reaching an agreement or relying on “solid” arguments of expert knowledge introduce an array of governance problems, especially with regard to the acceptability (which pertains to the application) of the reached agreement.

But the issue of the contextual application, of how to bridge the norm-creation act with the voluntary following of the provisions of the norm in practice, is somehow left behind. In the effort to bridge the justification of a norm with its application, Lenoble and Maeschalck [107] propose contextual proceduralization of the theory of governance. It focuses on the problem of the reduction of the context and on the shortcomings of the “intentionalist, mentalist, and schematising” stances that presuppose the conditions that make the exercise of reason possible [107]. They insist on the contextual adjustment of norms through a reflexive transformation of the actor’s contexts, a reframing of issues at stake and an operation of self-learning and identity-building in collective action [108, p. 25] as the right method for addressing the justification-application issue.

Thus RESPONSIBILITY might provide the opportunity to address the shortcomings of the “classical” procedural solution (Habermas, Rawls) in innovation governance and open space to problematize more on the relation of the actors to their contexts by proposing a more reflexive stance in order to activate their learning capacities. What is at stake is the possibility for collective exercise of power. It brings the need for an interaction between the various societal actors, which goes beyond just the availability of a participatory structure in which any dialogue can take place (and in which power and knowledge asymmetries might be reproduced) and also does not rely only on argumentative rationality as a source of normativity. The contextual pragmatics proposes a novel mode of relation with the norm by emphasizing the need to create the conditions for activating the learning capacities of the participants in order to allow what was previously referred to in this text as second-order reflexivity - their ability to reconstruct the context not only in view of their own cognitive framing but also with regard to the institutional arrangements that allow certain first-order reflexivity. For instance, in the case of ethics in research, it is not only the cognitive framing of the biomedical and legal fields that lead to reducing it to a tick-box, add-on component in the evaluation of a prospective research and innovation project. It is also the institutional arrangements (e.g. establishing certain administrative procedures and tools) which advance those particular framings (for example the structure of the Ethics Issues Table for the self-assessment of the candidates for European funding). RESPONSIBILITY, therefore, has the opportunity to use the advances in contextual pragmatics and attempt to organize its spaces for interaction in a way to allow the problematization of the context with regard to innovation governance while encouraging the development of the of learning capacities and skills of the participants. This comes from the realization that exchange of arguments and relying on argumentative rationality as a source of normativity is insufficient. In the same

vein, bringing people together does not automatically activate their learning capacities. Thus the project has the potential to address the shortcomings of the “classical” proceduralism and especially the contextual pragmatics’ critique that it is context-insensitive and it presupposes that the justification of a norm is enough to guarantee its application. RESPONSIBILITY can turn into a loci for democratic experimentalism in innovation governance in which the interaction between the various societal actors will aim at reconsidering their relation with the context and hopefully, acquiring new capacities and learning new roles. It does not mean that the Forum and the Observatory are the means which could immediately turn that into reality. Nevertheless, they are the places where the question how this could be done might be addressed and discussed extensively.

Still, the potential of the project might not be exhausted with that. We could make a step further and advocate for a rather ambitious role of RESPONSIBILITY – to go beyond contextual proceduralism and consider a more comprehensive solution – one which will ensure the relation between the individuals and the norms not only through reconsidering the problem of the context but also by focusing the attention on how the norms relate to values hold dear by the various societal actors. The rationale behind this is the need to take into account the variety of value-significances given to a norm on the basis of the actor’s contexts. Transposed to the problem of innovation governance, this means that the procedural solutions that need to be elaborated, somehow have to incorporate the problem of the axiological commitments of the societal actors and the significance they give to certain values in relation to particular norms.

Therefore, an adequate proceduralist solution needs to overcome the shortcomings of the classical and the contextual proceduralism while stepping on their achievements to explore a possible solution by blending of approaches:

- procedural (rule-based)
- reflexive (context-based)
- substantive (value-based) [109, p. 334]

In other words, a fully-fledged procedural solution suggests a rule or procedure for the construction of the norm, a reflexive stance to and co-construction of the context, and relevance to the value-systems of the individuals so that the binding force of the norm is promoted (this pertains to its application). Re-establishing the relation with the context on a new basis might not be enough to guarantee the enactment of the agreed norm. As the hypothesis for comprehensive proceduralism points out, no less important in the process of reflexive governance is the value-dimension of the agents’ relationships to the norms.

And this could be a good starting point for the organization of the interaction between the various societal actors in RESPONSIBILITY, in view of the variety of contexts and value-systems they relate to (the project represents a coordination effort with a global scope). It was already demonstrated that the Forum and the Observatory come as a response to all the theoretical and procedural gaps concerning the implementation of RRI (inherently addressing the norm justification-application issue). Nevertheless, they also provide an opportunity to become a means for exploring the limits of the existing procedural approaches, and even to subject to proceduralist scrutiny proceduralism itself, in the elaboration of novel solutions for innovation governance.

## 7 Appendix 1: The Lund Declaration

### The Lund Declaration

EUROPE MUST FOCUS ON THE GRAND CHALLENGES OF OUR TIME.

- European research must focus on the Grand Challenges of our time moving beyond current rigid thematic approaches. This calls for a new deal among European institutions and Member States, in which European and national instruments are well aligned and cooperation builds on transparency and trust.
- Identifying and responding to Grand Challenges should involve stakeholders from both public and private sectors in transparent processes taking into account the global dimension.
- The Lund conference has started a new phase in a process on how to respond to the Grand Challenges. It calls upon the Council and the European Parliament to take this process forward in partnership with the Commission.

The global community is facing Grand Challenges. The European Knowledge Society must tackle these through the best analysis, powerful actions and increased resources. Challenges must turn into sustainable solutions in areas such as global warming, tightening supplies of energy, water and food, ageing societies, public health, pandemics and security. It must tackle the overarching challenge of turning Europe into an eco-efficient economy.

To respond effectively, the European Research Area must develop processes for the identification of Grand Challenges, which gain political support and gradually move away from current thematic approaches, towards a structure where research priorities are based on these Grand Challenges. Responses to Grand Challenges should take the form of broad areas of issue-oriented research in relevant fields.

Processes to ensure quality, relevance and trust will be of crucial importance for Europe's ability to meet contemporary and future Grand Challenges and use knowledge as a tool to turn problems into opportunities and progress. Such processes have to be articulated in the context of Research, Education and Innovation communities, and be based on the understanding of the interaction between "bottom-up" and "top-down" initiated research. The development of such processes is a matter of urgency.

The identification of the Grand Challenges must engage the major stakeholders including the European Institutions, business, public services, NGOs and the

research community as well as interaction with major international partners. Meeting the challenges should involve public- private partnerships, including SMEs, with their potential to develop excellent and sustained problem-solving capacity. It will require Member States to develop more pro-active strategies on research priorities at regional, national and Community level. The Framework Programme for Research must also respond to these demands. Therefore the Commission and the Member States together should, based on a broad consultation process, agree on the most appropriate and efficient division of labour when designing future programmes.

Meeting the Grand Challenges also requires the following:

- **Strengthening frontier research initiated by the research community itself.**  
It is fundamentally important to create knowledge diversity, endowing the European Union with expertise, especially when confronted with unforeseen Grand Challenges and “shocks”. Competition among researchers will ensure that research carried out in Europe is of international excellence.
- **Taking a global lead in the development of enabling technologies** such as biotechnology, information technology, materials and nano-technologies.
- **Bringing together supply- and demand -side measures to support both business development and public policy goals.** Measures are needed to maximize the economic and societal impact of new knowledge in areas such as industrial, environmental and social policies, agriculture and regional development. Links between these policy areas and research policies must be strongly improved. Supply-oriented research and innovation policies should be more strongly supported by demand-oriented policies, such as lead market initiatives, public procurement, problem- and issue-driven policies and priority setting.
- **Excellence and well-networked knowledge institutions.** Modernisation of universities and cooperation between universities and research institutions is a key element for enhancing the competitiveness of European research. There is a need to develop instruments to stimulate and support initiatives for cross- border cooperation between knowledge-building institutions in creating peak of excellence environments including for less developed

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research institutions.

- **The creation and maintenance of world class research infrastructures** in Europe including installations for big science as well as those serving the needs of social sciences and humanities.
- **A risk-tolerant and trust-based approach in research funding** entailing actions for necessary changes in the Communities' Financial Regulation and Rules for participation and dissemination.

Meeting the Grand Challenges will be a prerequisite for continued economic growth and for improved chances to tackle key issues. It will involve women and men on equal terms in the development of society and cut across social, religious, generational and cultural obstacles bringing about new possibilities and increase the well-being and quality of life for all. Europe's leadership in meeting the global challenges will make it an attractive partner in global cooperation for sustainable development.

## 8 Appendix 2: Charter of Fundamental Rights of the EU

26.10.2012

EN

Official Journal of the European Union

C 326/391

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### CHARTER OF FUNDAMENTAL RIGHTS OF THE EUROPEAN UNION

2012/C 326/02

PREAMBLE

TITLE I DIGNITY

TITLE II FREEDOMS

TITLE III EQUALITY

TITLE IV SOLIDARITY

TITLE V CITIZENS' RIGHTS

TITLE VI JUSTICE

TITLE VII GENERAL PROVISIONS GOVERNING THE INTERPRETATION AND APPLICATION OF THE CHARTER

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### CHARTER OF FUNDAMENTAL RIGHTS OF THE EUROPEAN UNION

The European Parliament, the Council and the Commission solemnly proclaim the following text as the Charter of Fundamental Rights of the European Union.

#### CHARTER OF FUNDAMENTAL RIGHTS OF THE EUROPEAN UNION

The peoples of Europe, in creating an ever closer union among them, are resolved to share a peaceful future based on common values.

Conscious of its spiritual and moral heritage, the Union is founded on the indivisible, universal values of human dignity, freedom, equality and solidarity; it is based on the principles of democracy and the rule of law. It places the individual at the heart of its activities, by establishing the citizenship of the Union and by creating an area of freedom, security and justice.

The Union contributes to the preservation and to the development of these common values while respecting the diversity of the cultures and traditions of the peoples of Europe as well as the national identities of the Member States and the organisation of their public authorities at national, regional and local levels; it seeks to promote balanced and sustainable development and ensures free movement of persons, services, goods and capital, and the freedom of establishment.

To this end, it is necessary to strengthen the protection of fundamental rights in the light of changes in society, social progress and scientific and technological developments by making those rights more visible in a Charter.

This Charter reaffirms, with due regard for the powers and tasks of the Union and for the principle of subsidiarity, the rights as they result, in particular, from the constitutional traditions and international obligations common to the Member States, the European Convention for the Protection of Human Rights and Fundamental Freedoms, the Social Charters adopted by the Union and by the Council of Europe and the case-law of the Court of Justice of the European Union and of the European Court of Human Rights. In this context the Charter will be interpreted by the courts of the Union and the Member States with due regard to the explanations prepared under the authority of the Praesidium of the Convention which drafted the Charter and updated under the responsibility of the Praesidium of the European Convention.

Enjoyment of these rights entails responsibilities and duties with regard to other persons, to the human community and to future generations.

The Union therefore recognises the rights, freedoms and principles set out hereafter.

## **TITLE I DIGNITY**

### *Article 1*

#### **Human dignity**

Human dignity is inviolable. It must be respected and protected.

### *Article 2*

#### **Right to life**

1. Everyone has the right to life.
2. No one shall be condemned to the death penalty, or executed.

### *Article 3*

#### **Right to the integrity of the person**

1. Everyone has the right to respect for his or her physical and mental integrity.
2. In the fields of medicine and biology, the following must be respected in particular:
  - (a) the free and informed consent of the person concerned, according to the procedures laid down by law;
  - (b) the prohibition of eugenic practices, in particular those aiming at the selection of persons;
  - (c) the prohibition on making the human body and its parts as such a source of

- financial gain;
- (d) the prohibition of the reproductive cloning of human beings.

*Article 4*

**Prohibition of torture and inhuman or degrading treatment or punishment**

No one shall be subjected to torture or to inhuman or degrading treatment or punishment.

*Article 5*

**Prohibition of slavery and forced labour**

1. No one shall be held in slavery or servitude.
2. No one shall be required to perform forced or compulsory labour.
3. Trafficking in human beings is prohibited.

**TITLE II  
FREEDOMS**

*Article 6*

**Right to liberty and security**

Everyone has the right to liberty and security of person.

*Article 7*

**Respect for private and family life**

Everyone has the right to respect for his or her private and family life, home and communications.

*Article 8*

**Protection of personal data**

1. Everyone has the right to the protection of personal data concerning him or her.
2. Such data must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law. Everyone has the right of access to data which has been collected concerning him or her, and the right to have it rectified.
3. Compliance with these rules shall be subject to control by an independent authority.

*Article 9*

### **Right to marry and right to found a family**

The right to marry and the right to found a family shall be guaranteed in accordance with the national laws governing the exercise of these rights.

#### *Article 10*

### **Freedom of thought, conscience and religion**

1. Everyone has the right to freedom of thought, conscience and religion. This right includes freedom to change religion or belief and freedom, either alone or in community with others and in public or in private, to manifest religion or belief, in worship, teaching, practice and observance.
2. The right to conscientious objection is recognised, in accordance with the national laws governing the exercise of this right.

#### *Article 11*

### **Freedom of expression and information**

1. Everyone has the right to freedom of expression. This right shall include freedom to hold opinions and to receive and impart information and ideas without interference by public authority and regardless of frontiers.
2. The freedom and pluralism of the media shall be respected.

#### *Article 12*

### **Freedom of assembly and of association**

1. Everyone has the right to freedom of peaceful assembly and to freedom of association at all levels, in particular in political, trade union and civic matters, which implies the right of everyone to form and to join trade unions for the protection of his or her interests.
2. Political parties at Union level contribute to expressing the political will of the citizens of the Union.

#### *Article 13*

### **Freedom of the arts and sciences**

The arts and scientific research shall be free of constraint. Academic freedom shall be respected.

#### *Article 14*

### **Right to education**

1. Everyone has the right to education and to have access to vocational and continuing training.
2. This right includes the possibility to receive free compulsory education.

3. The freedom to found educational establishments with due respect for democratic principles and the right of parents to ensure the education and teaching of their children in conformity with their religious, philosophical and pedagogical convictions shall be respected, in accordance with the national laws governing the exercise of such freedom and right.

*Article 15*

**Freedom to choose an occupation and right to engage in work**

1. Everyone has the right to engage in work and to pursue a freely chosen or accepted occupation.
2. Every citizen of the Union has the freedom to seek employment, to work, to exercise the right of establishment and to provide services in any Member State.
3. Nationals of third countries who are authorised to work in the territories of the Member States are entitled to working conditions equivalent to those of citizens of the Union.

*Article 16*

**Freedom to conduct a business**

The freedom to conduct a business in accordance with Union law and national laws and practices is recognised.

*Article 17*

**Right to property**

1. Everyone has the right to own, use, dispose of and bequeath his or her lawfully acquired possessions. No one may be deprived of his or her possessions, except in the public interest and in the cases and under the conditions provided for by law, subject to fair compensation being paid in good time for their loss. The use of property may be regulated by law in so far as is necessary for the general interest.
2. Intellectual property shall be protected.

*Article 18*

**Right to asylum**

The right to asylum shall be guaranteed with due respect for the rules of the Geneva Convention of 28 July 1951 and the Protocol of 31 January 1967 relating to the status of refugees and in accordance with the Treaty on European Union and the Treaty on the Functioning of the European Union (hereinafter referred to as ‘the Treaties’).

*Article 19*

**Protection in the event of removal, expulsion or extradition**

1. Collective expulsions are prohibited.

2. No one may be removed, expelled or extradited to a State where there is a serious risk that he or she would be subjected to the death penalty, torture or other inhuman or degrading treatment or punishment.

### **TITLE III EQUALITY**

#### *Article 20*

#### **Equality before the law**

Everyone is equal before the law.

#### *Article 21*

#### **Non-discrimination**

1. Any discrimination based on any ground such as sex, race, colour, ethnic or social origin, genetic features, language, religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age or sexual orientation shall be prohibited.

2. Within the scope of application of the Treaties and without prejudice to any of their specific provisions, any discrimination on grounds of nationality shall be prohibited.

#### *Article 22*

#### **Cultural, religious and linguistic diversity**

The Union shall respect cultural, religious and linguistic diversity.

#### *Article 23*

#### **Equality between women and men**

Equality between women and men must be ensured in all areas, including employment, work and pay.

The principle of equality shall not prevent the maintenance or adoption of measures providing for specific advantages in favour of the under-represented sex.

#### *Article 24*

#### **The rights of the child**

1. Children shall have the right to such protection and care as is necessary for their well-being. They may express their views freely. Such views shall be taken into consideration on matters which concern them in accordance with their age and maturity.

2. In all actions relating to children, whether taken by public authorities or private institutions, the child's best interests must be a primary consideration.

3. Every child shall have the right to maintain on a regular basis a personal relationship and direct contact with both his or her parents, unless that is contrary to his or her interests.

*Article 25*

**The rights of the elderly**

The Union recognises and respects the rights of the elderly to lead a life of dignity and independence and to participate in social and cultural life.

*Article 26*

**Integration of persons with disabilities**

The Union recognises and respects the right of persons with disabilities to benefit from measures designed to ensure their independence, social and occupational integration and participation in the life of the community.

**TITLE IV  
SOLIDARITY**

*Article 27*

**Workers' right to information and consultation within the undertaking**

Workers or their representatives must, at the appropriate levels, be guaranteed information and consultation in good time in the cases and under the conditions provided for by Union law and national laws and practices.

*Article 28*

**Right of collective bargaining and action**

Workers and employers, or their respective organisations, have, in accordance with Union law and national laws and practices, the right to negotiate and conclude collective agreements at the appropriate levels and, in cases of conflicts of interest, to take collective action to defend their interests, including strike action.

*Article 29*

**Right of access to placement services**

Everyone has the right of access to a free placement service.

*Article 30*

**Protection in the event of unjustified dismissal**

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Every worker has the right to protection against unjustified dismissal, in accordance with Union law and national laws and practices.

*Article 31*

**Fair and just working conditions**

1. Every worker has the right to working conditions which respect his or her health, safety and dignity.
2. Every worker has the right to limitation of maximum working hours, to daily and weekly rest periods and to an annual period of paid leave.

*Article 32*

**Prohibition of child labour and protection of young people at work**

The employment of children is prohibited. The minimum age of admission to employment may not be lower than the minimum school-leaving age, without prejudice to such rules as may be more favourable to young people and except for limited derogations.

Young people admitted to work must have working conditions appropriate to their age and be protected against economic exploitation and any work likely to harm their safety, health or physical, mental, moral or social development or to interfere with their education.

*Article 33*

**Family and professional life**

1. The family shall enjoy legal, economic and social protection.
2. To reconcile family and professional life, everyone shall have the right to protection from dismissal for a reason connected with maternity and the right to paid maternity leave and to parental leave following the birth or adoption of a child.

*Article 34*

**Social security and social assistance**

1. The Union recognises and respects the entitlement to social security benefits and social services providing protection in cases such as maternity, illness, industrial accidents, dependency or old age, and in the case of loss of employment, in accordance with the rules laid down by Union law and national laws and practices.
2. Everyone residing and moving legally within the European Union is entitled to social security benefits and social advantages in accordance with Union law and national laws and practices.
3. In order to combat social exclusion and poverty, the Union recognises and respects the right to social and housing assistance so as to ensure a decent existence

for all those who lack sufficient resources, in accordance with the rules laid down by Union law and national laws and practices.

*Article 35*

**Health care**

Everyone has the right of access to preventive health care and the right to benefit from medical treatment under the conditions established by national laws and practices. A high level of human health protection shall be ensured in the definition and implementation of all the Union's policies and activities.

*Article 36*

**Access to services of general economic interest**

The Union recognises and respects access to services of general economic interest as provided for in national laws and practices, in accordance with the Treaties, in order to promote the social and territorial cohesion of the Union.

*Article 37*

**Environmental protection**

A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development.

*Article 38*

**Consumer protection**

Union policies shall ensure a high level of consumer protection.

**TITLE V**

**CITIZENS' RIGHTS**

*Article 39*

**Right to vote and to stand as a candidate at elections to the European Parliament**

1. Every citizen of the Union has the right to vote and to stand as a candidate at elections to the European Parliament in the Member State in which he or she resides, under the same conditions as nationals of that State.
2. Members of the European Parliament shall be elected by direct universal suffrage in a free and secret ballot.

*Article 40*

**Right to vote and to stand as a candidate at municipal elections**

Every citizen of the Union has the right to vote and to stand as a candidate at municipal elections in the Member State in which he or she resides under the same conditions as nationals of that State.

#### *Article 41*

##### **Right to good administration**

1. Every person has the right to have his or her affairs handled impartially, fairly and within a reasonable time by the institutions, bodies, offices and agencies of the Union.
2. This right includes:
  - (a) the right of every person to be heard, before any individual measure which would affect him or her adversely is taken;
  - (b) the right of every person to have access to his or her file, while respecting the legitimate interests of confidentiality and of professional and business secrecy;
  - (c) the obligation of the administration to give reasons for its decisions.
3. Every person has the right to have the Union make good any damage caused by its institutions or by its servants in the performance of their duties, in accordance with the general principles common to the laws of the Member States.
4. Every person may write to the institutions of the Union in one of the languages of the Treaties and must have an answer in the same language.

#### *Article 42*

##### **Right of access to documents**

Any citizen of the Union, and any natural or legal person residing or having its registered office in a Member State, has a right of access to documents of the institutions, bodies, offices and agencies of the Union, whatever their medium.

#### *Article 43*

##### **European Ombudsman**

Any citizen of the Union and any natural or legal person residing or having its registered office in a Member State has the right to refer to the European Ombudsman cases of maladministration in the activities of the institutions, bodies, offices or agencies of the Union, with the exception of the Court of Justice of the European Union acting in its judicial role.

#### *Article 44*

##### **Right to petition**

Any citizen of the Union and any natural or legal person residing or having its registered office in a Member State has the right to petition the European Parliament.

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*Article 45*

**Freedom of movement and of residence**

1. Every citizen of the Union has the right to move and reside freely within the territory of the Member States.
2. Freedom of movement and residence may be granted, in accordance with the Treaties, to nationals of third countries legally resident in the territory of a Member State.

*Article 46*

**Diplomatic and consular protection**

Every citizen of the Union shall, in the territory of a third country in which the Member State of which he or she is a national is not represented, be entitled to protection by the diplomatic or consular authorities of any Member State, on the same conditions as the nationals of that Member State.

**TITLE VI  
JUSTICE**

*Article 47*

**Right to an effective remedy and to a fair trial**

Everyone whose rights and freedoms guaranteed by the law of the Union are violated has the right to an effective remedy before a tribunal in compliance with the conditions laid down in this Article.

Everyone is entitled to a fair and public hearing within a reasonable time by an independent and impartial tribunal previously established by law. Everyone shall have the possibility of being advised, defended and represented.

Legal aid shall be made available to those who lack sufficient resources in so far as such aid is necessary to ensure effective access to justice.

*Article 48*

**Presumption of innocence and right of defence**

1. Everyone who has been charged shall be presumed innocent until proved guilty according to law.
2. Respect for the rights of the defence of anyone who has been charged shall be guaranteed.

*Article 49*

**Principles of legality and proportionality of criminal offences and penalties**

1. No one shall be held guilty of any criminal offence on account of any act or omission which did not constitute a criminal offence under national law or international law at the time when it was committed. Nor shall a heavier penalty be imposed than the one that was applicable at the time the criminal offence was committed. If, subsequent to the commission of a criminal offence, the law provides for a lighter penalty, that penalty shall be applicable.
2. This Article shall not prejudice the trial and punishment of any person for any act or omission which, at the time when it was committed, was criminal according to the general principles recognised by the community of nations.
3. The severity of penalties must not be disproportionate to the criminal offence.

*Article 50*

**Right not to be tried or punished twice in criminal proceedings for the same criminal offence**

No one shall be liable to be tried or punished again in criminal proceedings for an offence for which he or she has already been finally acquitted or convicted within the Union in accordance with the law.

**TITLE VII**

**GENERAL PROVISIONS GOVERNING THE INTERPRETATION AND APPLICATION OF THE CHARTER**

*Article 51*

**Field of application**

1. The provisions of this Charter are addressed to the institutions, bodies, offices and agencies of the Union with due regard for the principle of subsidiarity and to the Member States only when they are implementing Union law. They shall therefore respect the rights, observe the principles and promote the application thereof in accordance with their respective powers and respecting the limits of the powers of the Union as conferred on it in the Treaties.
2. The Charter does not extend the field of application of Union law beyond the powers of the Union or establish any new power or task for the Union, or modify powers and tasks as defined in the Treaties.

*Article 52*

**Scope and interpretation of rights and principles**

1. Any limitation on the exercise of the rights and freedoms recognised by this Charter must be provided for by law and respect the essence of those rights and freedoms. Subject to the principle of proportionality, limitations may be made only if they are necessary and genuinely meet objectives of general interest recognised by the Union or the need to protect the rights and freedoms of others.

2. Rights recognised by this Charter for which provision is made in the Treaties shall be exercised under the conditions and within the limits defined by those Treaties.
3. In so far as this Charter contains rights which correspond to rights guaranteed by the Convention for the Protection of Human Rights and Fundamental Freedoms, the meaning and scope of those rights shall be the same as those laid down by the said Convention. This provision shall not prevent Union law providing more extensive protection.
4. In so far as this Charter recognises fundamental rights as they result from the constitutional traditions common to the Member States, those rights shall be interpreted in harmony with those traditions.
5. The provisions of this Charter which contain principles may be implemented by legislative and executive acts taken by institutions, bodies, offices and agencies of the Union, and by acts of Member States when they are implementing Union law, in the exercise of their respective powers. They shall be judicially cognisable only in the interpretation of such acts and in the ruling on their legality.
6. Full account shall be taken of national laws and practices as specified in this Charter.
7. The explanations drawn up as a way of providing guidance in the interpretation of this Charter shall be given due regard by the courts of the Union and of the Member States.

#### *Article 53*

##### **Level of protection**

Nothing in this Charter shall be interpreted as restricting or adversely affecting human rights and fundamental freedoms as recognised, in their respective fields of application, by Union law and international law and by international agreements to which the Union or all the Member States are party, including the European Convention for the Protection of Human Rights and Fundamental Freedoms, and by the Member States' constitutions.

#### *Article 54*

##### **Prohibition of abuse of rights**

Nothing in this Charter shall be interpreted as implying any right to engage in any activity or to perform any act aimed at the destruction of any of the rights and freedoms recognised in this Charter or at their limitation to a greater extent than is provided for herein.

The above text adapts the wording of the Charter proclaimed on 7 December 2000, and will replace it as from the date of entry into force of the Treaty of Lisbon.

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