

**Project: The Landscape and Isobars of European Values in
Relation to Science and New Technology (Value Isobars)**

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– a blueprint**

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Executive summary

This paper summarizes some of the main results of the consortium discussions in the “Synthesis Work-package” of the project Value Isobars. The focus here is on what the project considered the essentials of a value-informed governance of S&T for Europe. Since the project worked from different disciplinary angles, and since the main task was to work out the main characteristics of a value-informed governance of S&T in contrast to what one experiences as characteristics of current governance of S&T, this paper delivers only a blueprint. It is understood that the various points presented here need to be further elaborated and detailed. It is also understood that the realization of the proposed blueprint will necessitate further research. The specific research needs connected to the proposal are detailed in the Deliverable 6.3.

A working definition of the concept of values is presented and detailed in Appendix 2, and our understanding of the essential characteristics of governance of S&T are detailed in Appendix 1. In the introduction it is argued that values provide for a better basis of governance than ethics. The reason for this is that values in general are viewed as enabling rather than restricting, they provide direction for action and they allow for value diversity in society. Important is also that values provide identities.

The paper puts forward the claim that traditional governance is too dominated by a deficient linear conception. Therefore a more holistic, circular and process-oriented scheme of governance is portrayed as the guiding idea. Major elements are a) setting research goals / research calls, b) the instrument of integrated projects, c) innovation, and d) implementation. The projects seeks to improve these processes mainly through three main inputs: (i) providing empirical information on values in relation to S&T, (ii) innovative participatory exercises, and (iii) strengthening of soft law as value oriented instruments of governance appealing to actors’ responsibility.

For the first phase of setting a research agenda some new mechanisms are proposed that would strengthen the value sensitivity. First it is proposed to utilize a Value Atlas that gives a concise overview of values in S&T, based on the best available data and research findings. (This proposal is further detailed in Deliverable 6.4.b) The Value Atlas would especially but not exclusively target policy makers. Second it is proposed to improve the methodology of technology foresight through the explicit inclusion of values as main drivers in scenario development, something which is currently not done. Third it is proposed to conduct some first participatory citizen consultations, using novel value-sensitive methods through which qualitative indications are provided on the desirability or problems of further S&T priorities.

In the second phase of integrated projects it is firstly proposed that best practice models are elaborated which identify management and organization structures which allow optimal synergy between the scientific / technological and the social science / ELSA components.

Secondly it is proposed that explicit ethical assessments are conducted in parallel. Participatory exercises with stakeholders should move from the stating of attitudes and interests towards more contextual information on how stakeholders construct trajectories of their value landscape. Thirdly it is proposed that fora be established so that relevant information on value-related issues across different project and across different technologies can be exchanged. Fourthly we stress the need to conduct more sophisticated European research on values and value-landscapes in relation to S&T. This research should in particular not classify social groups a priori (e.g. income, religion, etc.) but rather develop analyses that uncover types of values with common or different meanings for different social groups, as the problematic questions of science and technology often play out in differently stratified social groups.

In the third phase, the innovation phase, i.e. the phase where a future technology is taking shape, the question arises how this potential technology can or should be embedded in a social, economical, and legal reality. At this stage we again see the need for participatory consultations, not only with a narrow range of stakeholders, but with wider segments of society. We call for innovative methods to improve these processes, e.g. the innovative method of the TECHNOLIFE project. Secondly we also argue for a more widespread use of soft law and self-regulation as policy tool for this phase. Soft law and self-regulation can cope better with the flexibility of the developing technology, can adjust better to novelty and relate to prevailing uncertainties.

The fourth phase, the implementation phase when technologies are actually put to widespread use, provides the governance challenge of more reflexivity, i.e. the critical look back at how our early foresight and assessment exercises actually captured some of the developments and social perceptions that now come to the fore. This is an evaluative task, but it also implies active monitoring of social processes, with the focus on the interaction between practices, techno-scientific development, values and value-landscapes, and belief sets among people. Finally, we also argue for the need to extend one's perspectives beyond the immediate electorate, economy or populace of Europe, and thus the need to actively assess the global implications of our science and technology and reflect on whether our policies are adapted to the global responsibilities to which we are ethically committed. Science is, after all, universal and normatively committed to promote our global welfare in respect of human and environmental dignity. Assessing these global value perspectives should then feed back into our further research agenda.

This is the sum of the blueprint for an improved and value-informed governance of S&T as it emerges from the Value isobars project.

Value-informed governance of science and technology – a blueprint.

A proposal from the EU project Value Isobars¹

www.value-isobars.eu

There has been a general consensus that models of good governance need to inform the policies pertaining to science and technology². The concept of “good governance” is loaded with multiple meanings, but most often it includes the ideas of i) “inclusive governance”, ii) “democratic governance” and iii) “public engagement”. The White Paper on European Governance, for example, explicitly affirms “good governance” by elaborating the *five principles* of openness, participation, accountability, effectiveness, coherence (EC Commission 2009: 8/9). It was agreed that norms such as openness or participation are central cornerstones for a more legitimate and just (“good”) governance.

The Project idea

The project Value Isobars is designed on the assertion that good governance as it usually understood and practiced may still be short on precisely those factors that prepare the ground for socially sustainable innovations. The hypothesis is that social values, though often alluded or referred to, may constitute a crucial dimension that has not yet been fully included in governance of science and technology. While many scholars affirm that values are basic for norms, attitudes and preferences, little is done to explicate this insight into policy or even into empirical research. Value Isobars set out to amend this lack and provide some tentative insight on the possible role and function in governance of science and technology.

The project was designed around three main goals³:

¹ This paper is deliberately written without the usual list of scientific references. Since it is the result of the synthesis discussions of the project we try to focus on the practical implications of our ideas in the project. Most of the scientific underpinnings are detailed in the Deliverables of the other work-packages.

² For an explication of our understanding of the term “governance” see Appendix 1.

³ In order to achieve these goals the project included six work packages: WP1 on value concepts, WP2 on empirical value methods, WP3 on methods of value dialogues, WP4 on values and legal tools and regulations, and WP5 on two technologies as case studies, biometrics and dual-use issues in pathogen research. WP6 was a collaborative effort to synthesize the insights of the previous WPs into a blueprint of value-informed governance. Two further WPs were dedicated to dissemination, including contacts with an end-user group, and management. Six partners were involved in the project: The University of Bergen (coordinator), the London School of Economics, the University of Tübingen, DINAMIA at the University of Lisbon, dialog<>gentechnik from Vienna, and the University of Maastricht. -

1. The study shall provide the blueprints for a value-based and value-informed new and flexible governance of the science-society relation in Europe.
2. The study shall provide concrete guidance on implementation issues in relation to improved governance schemes.
3. The study shall identify necessary research tasks in order to move from a generic understanding of value-based and value-informed governance to more specific mechanisms of governance that improve current practice.

In this paper we shall only attempt to summarize the overall results of the project in regard to the overall aim of outlining a blueprint for value-informed governance, as they appear in the work of the partners. Thus we here only refer to the specific written deliverables for more detailed results⁴.

The Blueprint for value informed governance

The project did not identify a unique and agreed upon definition of the concept of values in the scientific literature. Instead one found a plethora of characteristics and definitions, even though many of them seem to build on some common intuitions. Thus the project agreed upon a working definition of its central term, values:

- *Values are reference points for evaluating something as positive or negative. Values are rationally and emotionally binding, giving long-term orientation and motivation for action⁵.*

Values result from valuation processes and vice versa, hence they 'originate' in a dynamic dialectic. It is important not to confuse values with attitudes or preferences because in the above mentioned sense, values are more basic. At the same time, values do not directly lead to action-commanding norms and regulations. This means that values and value governance open a dynamic, pluralistic as well as somewhat opaque and conflicting space of possible norms for action. Individuals and social groups feel bound to their values. Since we work on the assumption that both individuals and groups embrace sets of inter-connected values and assigns different weights to them, we also talk of the landscape of values.

Why values, and not just ethics?

Our partners from Tübingen advanced the hypothesis that in the EU and its S&T governance a shift to the concept of enabling values is accompanied by a side-lining of ethics in a specific sense. Norm-providing ethics is conceived of as a restrictive block and trouble-maker. Typically one expects a thumbs-up or thumbs-down from an ethical assessment based on

Basically, the different WPs delivered reports that roughly were structured along the lines of review and analysis, criticism, and finally innovative developments and recommendations.

⁴ The final deliverables are due 30 November 2011.

⁵ For a more detailed explication of this working definition, see Appendix 2.

ethical norms like respect for individual autonomy. In complex social environments this seems a narrow space of action, especially when some of these norms are not shared universally across society. Ethics understood this way appears sharp-edged and absolute.

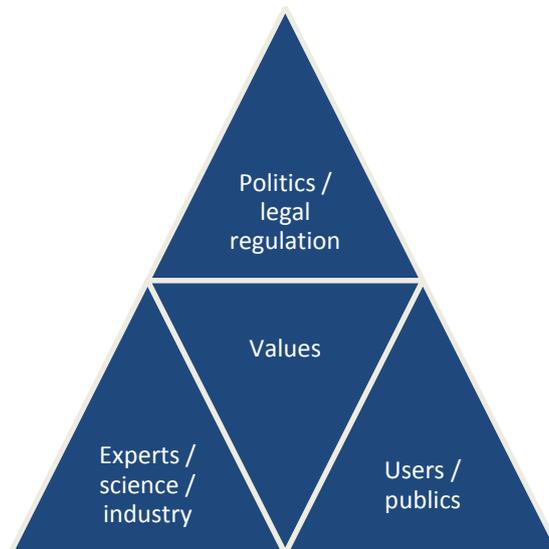
We are well aware that this is in some respect an unfair portrayal of many who engage in such ethical assessments. The EGE for instance has shown a great sensitivity for the uncertain spaces of development that need to be negotiated and discussed in wider social contexts. Their report on the future of agriculture is an example of this. We still hold that the normative focus that is implied by the term ethics may not be the vehicle with which to improve a science-society dialogue.

The concept of values is different in this respect. Values do not appear monolithically, they come in sets. They provide orientation without uniquely defining singular norms. They motivate rather than hinder positive action. They are important because they provide for a sense of identity. And values are shaded differently in different contexts. Even though we refer to them by singular terms, they typically assemble a set of meanings that have bearings on different contexts of uses. Values also allow for intensities as we e.g. assign different weight to them in value conflicts.

Furthermore, value commitments may be differentiated according to the different roles we take in life, thus e.g. differentiating between a private and a professional sphere. Values also stand in a dialectical relationship to the worldview which we adopt and the beliefs that we hold.

We worked on the assumption that one typically adopts values in sets, and that, furthermore, there are different kind of values, some e.g. that can be described as ethical values, others as aesthetical values or as political values. Value sets are usually activated during conflicts where particular paths of action seem to collide with some of the endorsed values. Values enter the public domain when one tries to legitimize, defend or argue for / against a certain path of action.

What makes values particularly attractive in the context of S&T governance, is that many controversies on scientific developments is that different social groups bring different values or different value shadings and weights into the debate, rather than referring to given norms. Concepts of the good life are at bottom negotiated in these debates. This automatically introduces the democratic element of the science-society dialogue, since no party can legitimately claim a privileged position in this respect. At the same time the focus on underlying values opens up a much more differentiated action space than a normative approach. We thus perceive the set-up of the science-society relation and thus the backbone of good governance of S&T as being centered around a platform of values that are negotiated in the public arena. Graphically we depict it in a simplified manner thus:



It emerges that it is plausible that governance approaches might refer to values rather than to ‘ethics’. Values make actions possible; one can relate to them without feeling an urgent need to do or leave anything specific. They outline a space of possible action, eventually leading to what is sometimes named a concept of the good life. Including the dimension of values, coping with a complex policy situation with reduced effectiveness of old hierarchical modes of governing, allows to better address citizens, which have to – and want to – understand, support, endure and participate consciously and deliberately in the governance of S&T.

Given this conceptual apparatus, new possibilities seem to open up for good governance. The project has elaborated several of these dimensions in more detail and synthesized them into a blueprint for value-informed governance of S&T. By the term “blueprint” we understand a basic design or building architecture which is to inform the more concrete construction of its depicted object. We have asked ourselves what the basic structure of the current governance of S&T looks like, and how and where the addition of this value perspective might actually improve on current governance schemes. Several suggestions have thus emerged which we shall elaborate in a moment.

First we need to state that the traditional basic structure of the governance of S&T moves through some essential phases: from research priorities and research calls to integrated, typically multi-disciplinary, research projects, to outcomes that are subjected to regulation and assessments, and constitute innovation. The mentioned principles of good governance sought to integrate concerns of the wider public into this process at various points. Ethical analysis was often, though not always, coupled to the research and then performed in relation to outcomes and their possible legal regulation.

Graphically and certainly somewhat simplified we may depict the most common model of S&T governance as follows:

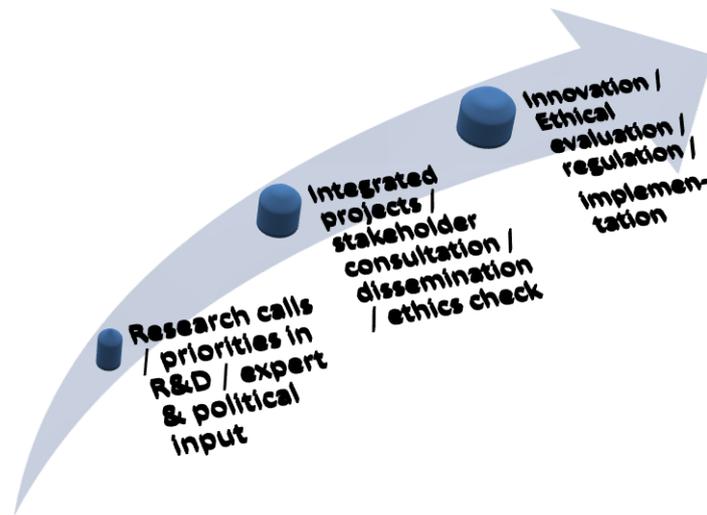


Figure 1: Phases of S&T governance.

In the blueprint of value-informed governance of S&T this scheme is enriched along several lines and additions. Firstly, it is presented as more dynamic, reflecting the insight that the values held by people are prone to some dynamic change, as a response to earlier experiences with science and technology. Though values typically do not change as quickly as asserted attitudes, they also are influenced by changing beliefs and experiences, if only in the weight that is given to them in relation to other values or the connotations through which they are understood. Furthermore, learning from previous experiences is seen as important for good governance. Thus results the need of dynamic feedback .

Secondly, the Value Isobars blueprint proposes several mechanisms which show potential in regard to three basic functions: 1) providing empirically founded information on values and value conflicts, specifically in regard to S&T, 2) extending participatory and consultative processes to citizens at large that explicitly refer to their values, and 3) including soft law policy tools that appeal to the values and responsibilities of various actors. We shall explain some of these mechanisms in more detail below.

Here is a simplified graphical representation of the blueprint as it is conceived within the Value Isobars project:

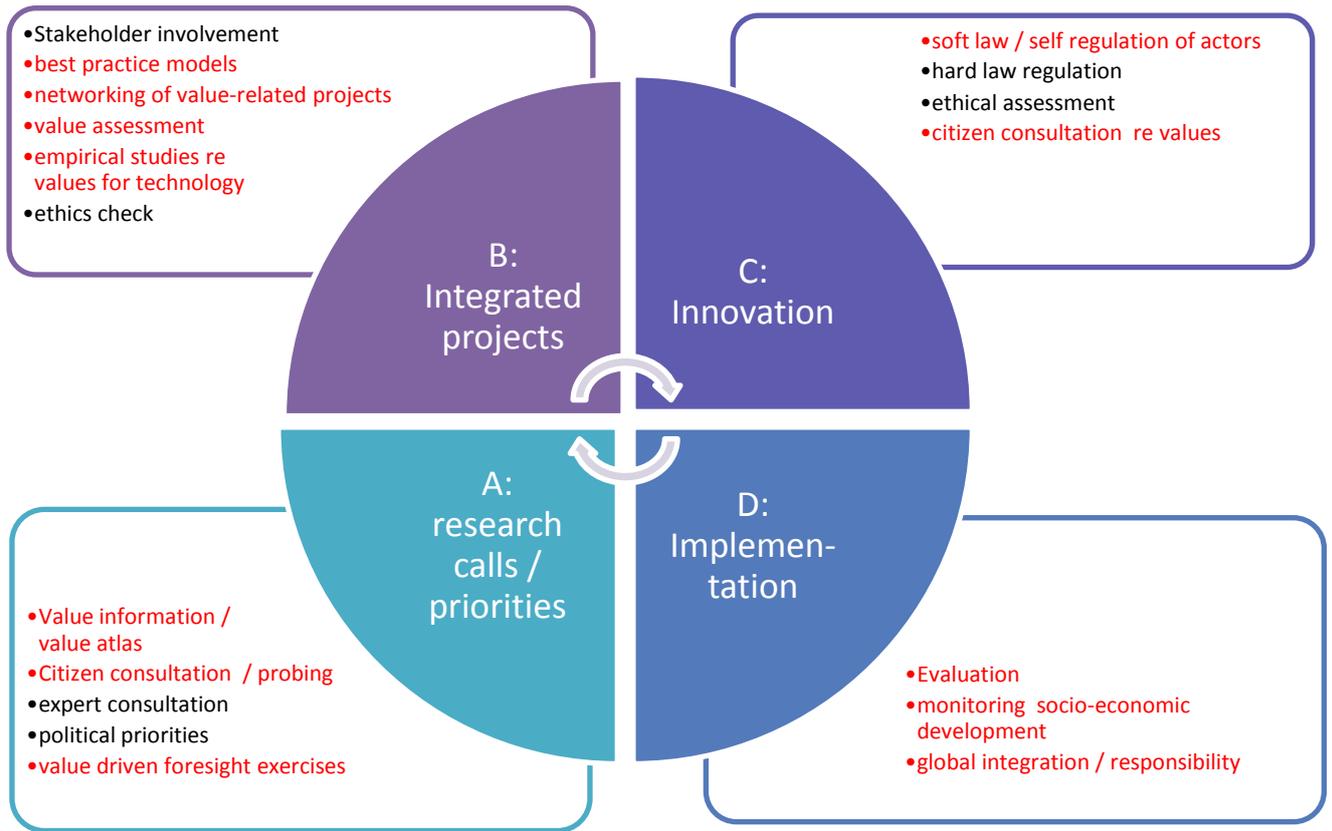


Figure 2: Blueprint of value-informed governance of S&T.

A : Research calls / priorities

To start with, there is the identification of research priorities and calls for projects. This is normally the outcome of a process where expert advice enters a political decision process, guided largely by socio-economic considerations. In the value-informed governance model here proposed this process is enriched by further elements.

First there is the possibility to include a number of carefully prepared participatory exercises with ordinary citizens about basic priorities for S&T priorities. In Value Isobars a promising model of a science parliament with young people has been performed. Science parliaments address the following general goals in regard to S&T policies:

- A source of legitimization
- A supplementary tool to detect relevant social values
- To provide public views and perspectives
- To identify areas of public consensus.

Obviously, these participatory exercises cannot result in statistically representative views or recommendations of the public at large. Yet they can help focus attention on certain value-sensitive issues, and they can provide for a valuable counter-perspective to the expert advice (as a form of extended peer review). Such exercises need not be performed on a really large scale, but they could e.g. accompany the expert advices from different sources and countries. The upshot of this process would be an early sensitivity to gaps between expert and political council versus public perception in regard to the guiding values for S&T policies.

Secondly, the Value Isobars project stresses the need to provide better information on the value landscape in Europe. This is crucial for a good decision process, as scientific advances, both the uncontroversial and the controversial ones, will shape the value landscape of future Europe, enhancing the values of some groups while disadvantaging others. But which values do decision-makers need to take into account in order to make legitimate policies? Whose values count? How are possible value dilemmas played out in the perception of the public? Currently there is a clear lack of relevant information on these points, in particular in relation to S&T. Surveys such as Eurobarometer, World Values Survey or European Social Survey do provide some important data, and can be used for further analyses. Yet, as WP2 also points out, the challenge is to find creative ways of linking datasets in order to explore values not as abstracted from their context but as they relate to beliefs about science and technology. Obviously there is a research need implied here.

On a more pragmatic note the project suggest to produce a Value Atlas in regular intervals that would take up questions of science and technology in relation to their value dimensions. The project has produced a proto-type of such an atlas. Its function would be to address issues of current concern and relate them explicitly to values as they are held in various societies. The target group would be decision makers at various levels who typically do not have the time nor the means to follow a number of detailed empirical studies. In a concise

manner it would highlight selected issues as a 2-pager, with brief textual information, accompanied by informative graphics and references to further sources.

As an example consider the debate about biometrics. In policy fora this debate is typically portrayed as a trade-off between two values, privacy versus security. Yet some probing of the available data clearly shows that the picture is more complex and that different groups of citizens tend to carve out the problem differently, e.g. in relation to trust in political institutions.

Value Isobars thus proposes to include the production of a European Value Atlas as an important element of value-informed governance of S&T. It is the manifestation of what we in the project title referred to as value “isobars”, i.e. the equivalent to weather charts, providing an overview of the landscape of values that particular S&T developments enter into.

Thirdly it should be remarked that foresight exercises also – at least potentially – provide valuable input into this policy process. Such foresight exercises are already conducted at various national and international levels. Foresight is also seen as a vehicle for science-society dialogue and practiced in several countries with this goal in mind. The ERA-NET project FORSOCIETY has provided a comprehensive overview of methods and results in Europe, and given nine options for improving current foresight studies, mostly focused on expanding the democratic and participatory aspects of foresight. While we share these recommendations, the project also wishes to emphasize that in our view the currently employed methodological approaches neglect the possibility to connect to values in a more direct manner. Scenarios of future developments are typically designed along two parameters, namely through identification of main socio-economic drivers and main uncertainties. We believe that research should be conducted to elucidate how also societal values can be utilized in the construction of future scenarios in these foresight exercises, as additional drivers. Bert de Vries and Arthur Petersen, in an article on “Conceptualizing sustainable development – An assessment methodology connecting values, knowledge, worldviews and scenarios” (*Ecological Economics* 68 (2009) 1006-1019), have proposed a similar idea. The rationale is that quality of life is the major concern when planning future developments. While we see their discussions of values as still too limited in scope and method, as they directly adopt the standard approaches of one or two dimensional value spaces, we agree in the principal outlook. Again it would be through the detailed empirical study of values in relation to S&T that the methodological tools of foresight exercises could be improved, and thus make them into more valuable tools in the policy process.

B: Integrated projects

The next phase to consider in a value-informed governance of S&T would be the phase of research, typically in the form of larger integrated projects. Expectations to the format and running of such projects have gradually expanded over the years, particularly but not only in regard to European projects. A checklist of ethical concerns and gender aspects is now

routine in all such projects. Furthermore, in many fields of research some form of stakeholder participation is included as an additional quality check. In areas that are viewed as potentially problematic in regard to societal considerations, one often opts for the inclusion of social science, law, philosophy or ethics in the project itself.

Yet, these measures are often reported of being beset with problems. The social science or ethics perspective function sometimes merely as an add-on, rather than being fully integrated into the research itself. While the guiding idea of such integrated projects seems right, their reality is wanting. The Value Isobars sees room for improvement here, and again partly through the explicit role of value considerations. The key-terms highlighted by us for this phase would be value-learning and value-integration.

A first mechanism of improvement would address organization and management issues. In multi-disciplinary and multi-national projects one typically faces the problem that participating parties do not see how societal concerns such as values can affect their work other than through a more decisive dissemination and information process. The problem is one of understanding the dynamics and implications of societal concerns and values for the actual research. What is called for is a project organization and management that provides enough room for mutual learning among the involved project partners. Guides or examples of best management practices for integrated projects could address this issue. A few projects seem indeed to fare much better in this regard, due to coordinators who are keenly aware of the importance of these societal concerns. The current EU project SEAT ("Sustaining ethical aquaculture trade", coordinated by Stirling University) can serve as an example here.

Secondly, the social science and ethics components should be encouraged to perform explicit integral value assessments of the intended outcomes of the research. Instead of merely seeking backing in general normative theories of various kinds, these studies should identify groups and parties who are likely to benefit or lose from the development. They should connect advantages and disadvantages to major value choices and value conflicts, as they may appear in the economic, legal or social sphere. Identification of Who?, What? and Why? along the chain of actors and stakeholders needs to be explicitly addressed. Participatory exercises with stakeholders should thus move from the stating of attitudes and interests towards more contextual information on how stakeholders construct trajectories of their value landscape. Typically this will call for qualitative research, e.g. in focus groups.

Thirdly, we believe that valuable insights about science-society relations and value research are often not communicated across projects. The realities of European research are very fragmented and in a world of information overflow this provides a challenge for busy researchers. Each integrated projects functions typically as a system where the information flow in and out consists of written documents or oral presentations at topical conferences. Given that our efforts of integration of societal value concerns are still rudimentary, and that social science, law, philosophy and ethics often struggle to identify or define their role in

these projects, it seems advisable to routinely provide for fora of scholarly exchanges across running projects as a part of the project work. The above mentioned integral value assessments do not yet have a common methodological framework nor are they performed by many. In order to move towards sustainable innovation and socially robust technologies such a forum for cross-project communication would be largely helpful.

Fourthly, we believe that questions of societal values as they appear in relation to science and technology are a legitimate field of research in itself. As our WP2 convincingly shows, these questions are understudied in the literature and even the empirical datasets that are available do not readily provide the information that would carry great policy relevance. For instance, while existing studies classify social groups a priori (e.g. income, religion, etc.) it might be more relevant to develop analyses that uncover types of values with common or different meanings for different social groups, as the problematic questions of science and technology often play out in differently stratified social groups (e.g. young users of social media or health seekers etc). It is also observed that longitudinal studies are absent from this field of studies. Several other research needs for the empirical study of values in relation to S&T are identified in our project. These include also conceptual, philosophical work, leading to a conceptual apparatus that readily feeds into the empirical work, as WP1 in our project has shown. What we want to convey here is that an intensification of such studies along these lines would directly benefit the policy process, and thus contribute to an improved, value-informed governance of S&T.

C: Innovation

The third phase of S&T governance deals with innovation. We deliberately want to separate innovation from the societal implementation of research findings and innovations. In research policy documents one may detect a tendency to formulate innovation as the end goal of scientific and technological research. Yet we know that only a small segment of innovations are actually later implemented on a larger scale. This fact one can for instance read off the sheer number of patents that is in stark contrast to those few which actually make it to the market. Apparently this is not only a matter of available risk capital, but other factors, such as consumer attitudes play in here. So far, relatively little attention is given to the social context that transforms an innovation into a technology that eventually is implemented on a larger scale. Yet what could count in the end as a success of our S&T policy must surely be the scientific idea that makes it all the way to the market.

There is a vast literature on innovations and what constitutes an ideal environment for innovations. Traditional linear models (from basic through applied science to innovation) are usually criticized and replaced by some form of network model, often involving a wide range of important actors.

Innovations, then, meet the problem of implementation, i.e. the question to what extent they are appealing to possible users or not, and whether their uses should be subjected to special constraining regulation, or perhaps not be pursued at all. Ethical assessments may

actually precede the question of legal regulations at this point. National ethics bodies, or the EGE, may then be consulted (e.g. regarding the use of animal cloning). Their opinions inform the regulatory bodies.

Again, the Value Isobars project sees a need to supplement these opinions with participatory exercises that involve the public at large to a greater extent than currently practiced. While exercises with stakeholder groups do perform an important function, they do not exhaust the space of a democratic science-society debate. Innovative forms of public consultation need to supplement this, as e.g. outlined in our WP2. We would also like to mention that the Technolife method is a very promising method to fill this void. The use of consultation methods based on social media and engaging visual material seems very promising in order to trigger value considerations of people. As technologies potentially contribute to the shaping of the life-world of ordinary citizens, it is predominantly the full range of values as they are held in society that need to inform the use of policy tools like regulation at this point. In our opinion, it is this full range of values that in the end will mark what would make up socially sustainable and robust innovations.

Yet, Value Isobars with its focus on values, has also argued the case for policy tools that rely on so-called soft law and self-regulation, as discussed in our WP4. They provide possibly better tools than “hard law” to cope with the need for both flexibility and adjustment to novelty and prevailing uncertainties. Their relative advantage lies mainly in their ability to engage wider sections of society, openness for a variety of more specific interpretations and practices, and their appeal to the social co-responsibility of various actors. So far, within the EU, soft law and self-regulation has been resorted to mainly as preparatory or complimentary tools to hard law. An example is the code of conduct for Nanosciences and nanotechnologies. The project claims that the positive potential of soft law tools in complex scientific and technological fields with great inner dynamics is still underestimated.

A potential candidate for such soft law and self regulation may be our second case study, explored in WP5, the dual use problematic in pathogen research. Common between biometrics and dual use is their central value of security, a value that opens up for various and often quite contested social interpretations. In contrast to the biometrics case, however, here we find that some of the values that seemingly are at stake, like the freedom of scientific research, are assumedly embraced by quite a number of actors and by larger segments of the public. The question then is how to assure the security that many want without infringing on the values that other treasure? Because of the international nature of pathogen research, specific national interests may also come in the way of widely applied regulatory measures. Soft law, self regulation of various actors, perhaps in the form of codes of conduct or internal control may be an appropriate policy tool.

D: Implementation

The final phase of value-informed governance of S&T will need to look at how technologies fare that actually are implemented and how they fare in their various social contexts. This

phase is important as it actually provides the test-ground for those foresight exercises and assessments that have followed the scientific and technological development. Have our assessments actually correctly identified the issues as they then materialized in the technological implementation? Were those groups that were portrayed as potentially advantaged or disadvantaged really experiencing this? If the development turned out differently than we expected, was this the result of inherent shortcomings in our assessments and policies, or was it the result of the inherent flexibility that accompanies most technologies? These questions will need to be answered, if we strive for good governance of S&T.

From this follows the need of monitoring the technological implementation in its various social contexts. This monitoring should then lead to an evaluation of our policy tools and feed back to further research needs and developments. Without this feedback we risk the continuation of practices and policies that are ill-adapted to the social realities at which they aim.

We want to add a further, value-oriented consideration at this point. The policies and governance processes that we have argued for, have largely been framed within the context of the value landscape of the society to which the policy-makers are accountable, i.e. typically their electorate. Yet, parts of our science and technology have global consequences, not only economically, but also socially and environmentally. Climate change is a case in point. Food production and food technology another. In the last instance, science needs global governance, and responsible research needs to be reflective on the global dimension. This implies in particular a keen awareness that value landscapes differ considerably with different cultures and different stages of economic and social development. From this follows the need to actively assess the global implications of our science and technology and reflect on whether our policies are adapted to the global responsibilities to which we are ethically committed.

Summary

The project Value Isobars puts forward for further discussion a blueprint of a value-informed blueprint for governance of S&T. This blueprint draws on conceptual and empirical insights on the role of values for the life of people and their designs to attain a good life. We see a clear need to explicitly bring to the attention of policy makers what we know about how values relate to different areas of scientific and technological development. Parts of that effort needs to come from research itself, and parts of that effort needs to come about through improved participatory exercises. Value perspectives need also to be integrated to a larger extent into the research efforts themselves. Rather than limiting the range of policy actions we see them as enriching, since they more directly address the responsibilities of various actors, e.g. through soft law. Our governance model is dynamic and comprehensive and socially inclusive. All of this we consider as improving the governance framework as we currently see it practiced.

Appendix 1:

The understanding of the term “governance” as it is used in the project Value Isobars

General understanding

The term “governance” is subject to many different understandings. The word governance derives from the Greek verb κυβερνάω [kubernáo] which means “to steer”. Governance is taken to mean steering or regulation in a general sense. It can be understood as “the processes whereby actors formulate, implement, enforce and review rules to guide their common affairs” (Scholte 2005: 140), and as the process of selecting policy options among competing values and translating them into political programmes (Pahl-Wostl/Toonen 2009: 8). “Since governance is the process of decision-making and the process by which decisions are implemented, an analysis of governance focuses on the formal and informal actors involved in decision-making and implementing the decisions made, and the formal and informal structures that have been set in place to arrive at and implement the decision” (UNESCAP 2011).

From state centric to polycentric governance

It has been argued that every society has distinctive modes of governance and that prevailing structures of governance can alter through history (Scholte 2005). It is common to read the development in the recent decades as involving a shift from a centric (solely state-based) towards a more polycentric or multilevel mode of regulation. In line with this, contemporary governance-approaches usually understand politics as a process in which state and non-state actors (NGOs, churches, labour unions, supra-state actors, etc.) contribute on different levels, in different arenas, and with different modes of interaction to policy formulation and implementation. From this point of view, national government will be only one of the many actors in governance in a particular society; it will be embedded in multi-scale and diffuse networks of regulation.

Normative uses of the term “governance”

Some set up a dichotomy between governance and politics, where governance is seen as management or as the administrative and process-oriented elements of governing, whereas politics refer to political contest and the democratic and public deliberative aspects of working out laws and policies (Loughhead 2009). More commonly the term “governance” is now used in a normative way as signalling a concern with “good governance”. The concept of “good governance” is loaded with multiple meanings, but most often it includes the ideas of i) “inclusive governance”, ii) “democratic governance” and iii) “public engagement”. The White Paper on European Governance, for example, explicitly affirms the concept of “good governance” by elaborating the five principles of openness, participation, accountability, effectiveness, coherence, (EC Commission 2009: 8/9)⁶.

⁶ These principles are said to reinforce the principles of proportionality (measures chosen should be proportionate to the objectives) and subsidiarity (decisions should be taken as close to those concerned as possible) (p 10).

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Appendix 2:

“Values”: A working definition and further explications

Values are reference points for evaluating something as positive or negative. Values are rationally and emotionally binding and they give long-term orientation and motivation for action.

Further explication:

- a) ***Connection to agents.*** Values are held by agents, both on the individual and collective level.
- b) ***Connection to value sets.*** Normally an agent does not only affirm a single value, but rather he or she affirms multiple values. Agents typically group these multiple values as specific “value sets”. An agent may for example affirm a set of values comprising the values “autonomy”, “efficiency” and “welfare”. The same value, e.g. “autonomy”, can occur in different value sets and take on different priority and meaning when it is connected to various other values.
- c) ***Connection to identities and practices.*** Values and value sets are closely connected to the agent’s identity. By holding something as a value an agent imbues it with meaning and importance. At the same time roles and practices are centred around certain values and value sets. The sciences, for example, stress different values, and different prioritizations between values, from religious practices or family life. Thus we can talk about “scientific values”, “religious values”, “family values”, “political values”, etc. A person has several roles and value sets. Different contexts may trigger the importance of a particular value set for the person or the group.
- d) ***Contrast to preferences and attitudes.*** Although values, attitudes and preferences are often used synonymously, we see values as something connected to, but distinct from attitudes and preferences. Attitudes refer to a tendency to evaluate things in a particular way. To have a preference is to have a greater liking for one alternative over another. We attribute a higher importance and meaning to values than to preferences and we use values to evaluate both preferences and attitudes. Values have a prescriptive dimension which preferences lack. When we affirm something as a value we want others to see it as a value too.
- e) ***Contrast with norms.*** Values do not directly prescribe or proscribe actions, as norms do. Values give motivation and rationale for action without demanding a specific (course of) action.
- f) ***Connection to beliefs.*** Beliefs about what is the case in the world influence our value judgements. For example, whether one judges that biometric technologies are or are not in conflict with (some of) one’s values will be influenced by one’s belief about the likelihood of the misuse of biometric information.
- g) ***Reflexive, rational and emotional dimensions of values.*** We assume that our values can withstand criticism and we are willing to give reasons for them. Thus they have a reflexive, rational and hermeneutic dimension. We are also emotionally attached to our values, this is

particularly evident when our values are threatened. As reference points of evaluation, values are relatively stable. However, we can be led to see that affirming certain values is wrong, or to see that our value sets are inconsistent and therefore modify them. Values are thus neither always fluctuating, nor given once and for all.

h) ***Expressed values and revealed values***. In the study of values it is sometimes useful to make a distinction between “revealed values” and “expressed values”. Expressed values are values that people explicitly affirm. Revealed values are inferred from actions and preferences.⁷

⁷ This definition does not address methodological questions of properly identifying and separating the two value types and the issue of whether values or preferences are at stake in social science surveys.