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in Relation to Science and New Technology

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Final Report

PROJECT FINAL REPORT

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Final Report

Please note that the contents of the Final Report can be found in the attachment.

4.1 Final publishable summary report

Executive Summary

The starting point of the Value-Isobars project has been the observation that a number of important debates centering around questions of identity and visions for future development have turned to the issue of values as guiding principles. This holds true not only for current debates about European identity, but also in particular for controversies about contested science and technology (S&T). Furthermore, the project partners have noted that scholarly contributions pertaining to the identification of fundamental values in our societies not only are scattered between several disciplines, but also to a significant extent provide a confusing picture in regard to their potential policy implications. Good governance of S&T as it usually is understood and practiced may still be short on precisely those factors that prepare the ground for socially sustainable innovations. The project thus calls for value-informed governance based on a better understanding of S&T related values of different societal groups and sectors, including more focus on ordinary citizens and identification of actual and potential value conflicts. The project defined values in the following manner: Values are reference points for evaluating something as positive or negative. Values are rationally and emotionally binding, giving long-term orientation and motivation for action. The working hypothesis was that social values, though often alluded to, may constitute a crucial dimension that has not yet been fully included in governance of science and technology. The project was therefore designed around three main goals: (i) To provide a blueprint for a value-based and value-informed new and flexible governance of the science-society relation in Europe. (ii) To provide concrete guidance on implementation issues in relation to improved governance schemes. (iii) To 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.

The project work was done in several multi-disciplinary work-packages, including a philosophical / sociological / political science dimension, a social psychology dimension, a legal dimension and a science-society / participatory dimension. Two specific case-studies were included: one on biometrics and one on pathogen research with dual use problematic. It emerged in the project that governance approaches might preferably refer to values rather than to 'ethics'. Values make actions possible; they outline a space of possible action. Including the dimension of values allows to better addressing citizens, which have to – and want to – understand, support, endure and participate consciously and deliberately in the governance of S&T. In addition to several scientific and scholarly findings, the project has thus concluded with a number of findings and recommendations with potential policy implications. We mention a few of the central findings in brief:

- In general, there is a need to provide better information on the value landscape in Europe, and that includes utilizing and improving the data from surveys and qualitative studies.
- It is recommended to produce a European S&T 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 and groups in society.
- The project encourages 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, and one specific format has been developed and tested as a small-scale pilot for this purpose.
- The project has also argued the case for policy tools that rely on so-called soft law and self-regulation. They are seen to provide better tools than “hard law” to cope with the need for both flexibility and adjustment to novelty and prevailing uncertainties.

Summary description of project context and objectives

The Project background in brief:

The starting point of the Value-Isobars project has been the observation that a number of important debates centering around questions of identity and visions for future development have turned to the issue of values as guiding principles. This holds true not only for current debates about European identity, but also in particular for controversies about contested science and technology (S&T). Furthermore, the project partners have noted that scholarly contributions pertaining to the identification of fundamental values in our societies not only are scattered between several disciplines, but also to a significant extent provide a confusing picture in regard to their potential policy implications. This can certainly be seen in the field of S&T policies, as exemplified by the debates about the genetic modification of crops and food where the focus has moved from risks to ethics.

Good governance needs to inform the policies pertaining to S&T. The White Paper on European Governance explicitly affirms “good governance” by elaborating the five principles of openness, participation, accountability, effectiveness, coherence (EC Commission 2009: 8/9). It is generally understood that norms such as openness or participation are central cornerstones for a more legitimate and just (“good”) governance. Yet, good governance, even with these specifications, may still be short on precisely those factors that prepare the ground for socially sustainable innovations, i.e. short on the value dimensions. The project thus calls for value-informed governance based on a better understanding of S&T related values of different societal groups and sectors, including more focus on ordinary citizens and identification of actual and potential value conflicts.

The project Value Isobars has worked on the assumption that a good grasp of social values, i.e. values that are either endorsed by some or disputed among several sectors of society, is a precondition for coming to terms with what people refer to when asking for more explicit considerations of ethical aspects (in general: the ELSI part) of new S&T. The project partners did not find a generally accepted definition of the term ‘values’ or ‘social values’ in the scholarly literature. They have therefore adopted a working definition, on the basis of which the different work-packages have performed their work:

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

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, yet individuals and social groups feel bound to their values. This means that values and value governance open a dynamic, pluralistic as well as somewhat opaque and conflicting space of possible norms for action. 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. One can make the claim that values are one of the key and unexplored parameters responsible for changing attitudes on science and technology.

The working hypothesis was therefore that social values, though often alluded to, may constitute a crucial dimension that has not yet been fully included in the governance of science and technology. The project partners found this starting point to correspond to aspects of what the European Commission in its Framework Program 7 (FP7) asked for.

The FP7 Capacities Work Programme: Science in Society for 2008 prioritized among others “the continuous development of a new conceptual framework”, respecting “continuity, while introducing new elements”. The Value isobars project thus aimed at developing precisely such a new conceptual framework, while building on the insights and structures of previous experiences.

In the call SiS-2008-1.1.2.1. Ethics and new and emerging fields of science and technology, specifically in the work program as sub-part 5.1, First action line: “A more dynamic governance of the science and society relationship” explicit reference was made to improved governance of S&T. Elements of this were assumedly including the philosophy of a dialogue (instead of a top-down one-way communication) between experts (science, industry) and the surrounding public(s). In this way, science and society relationships became an integral part of a forward looking understanding of deliberative democracy within Europe.

The description of area SiS-2008-1.1.2.1 (Ethics and new and emerging fields of science and technology) calls among others for research on “ethical issues for which no European or international guidelines exist and which would be relevant for European science and technology policy. Particular consideration should be given to areas such as information and communication technologies, dual use, which have less extensive guidance, and can include as well but not limited to technologies in

the field of security... The research should yield insights on how those ethical issues could be considered in EC policy”.

On this background, the Value Isobars project took the stance that a more explicit consideration and integration of social values would open up new perspectives on how to deal with ethical issues in an improved governance model of S&T in EC policy.

It was realized already at the outset of the project that a really comprehensive treatment of all governance aspects across all relevant areas could not be achieved during the life-time of the project. This realization was due to basically two complexities: firstly to the complexity of the different areas of new S&T, where some areas may elicit aspects for consideration that are not relevant for other areas; secondly to the complexity of the various strands of scholarly research that deals with social values within very different conceptual frameworks. Therefore, the ambition of the Value isobars project was restricted to the outline of a ‘blueprint’ for a value-informed governance of S&T, i.e. the identification of new ‘architectural’ building-blocks that would account for the recognition of the important role of social values in the acceptance and adoption of new S&T in European societies. The project adopted the metaphor of ‘value isobars’ because it envisaged that the basic task of good governance of S&T was to draw a ‘map’ of the dynamics of different social values in different societies and sectors of societies such that ‘pressure zones’ could be identified early, that areas of convergence and conflict could be detected and that this information could then be utilized for a better dialogue between science and society, preparing the ground for responsible and robust innovation.

Isobars in their common weather forecast meaning are lines drawn between points of common atmospheric pressures. It was through representations of this kind that the Norwegian scientist Vilhelm Bjerknes was able to introduce the concept of a “Polar-front” and through it eventually to revolutionize meteorology. In the diverse and changing European landscape of values the ambition of a value-informed S&T governance should be a similar achievement.

In order not to explore this task on a merely theoretical level, the project has undertaken to do explore two areas of S&T development in closer detail, using them both as case studies, illustrations and pilots. These fields of S&T are (i) biosecurity and dual use problematic in pathogen research and preventive research on pandemic outbreaks biotechnologies, and (ii) security research used for individual identifications in large databases, i.e. biometrics. Both cases exhibit the typical public value based ambiguity that characterizes the need for concerted governance. Furthermore, both cases exemplify fields of research that are still lacking overarching ethical frameworks and guidance.

The objectives of the Value isobars project:

In very general terms, the project aimed at improving the governance of S&T in EC policy through a more adequate and better informed inclusion and recognition of social values pertaining to S&T in European societies. Given that it was understood at the outset that research based information on social values pertaining to attitudes to new S&T would be limited and not easily amenable to the needs of governance and EC policy, the project aimed also at the identification of specific research needs that hold the promise of supporting the governance and policy needs of relevant decision-makers within the Europe.

The overall goals of the study were:

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.

To this end, there were a number of sub-goals addressed in this study:

- i. The conceptions of the nature and the problematic heterogeneity of social values and the underlying conceptual differences across various disciplines in the humanities, the social sciences and, more and more, also the natural sciences are to be reviewed and critically discussed in order to provide a theoretical framework for further study.
- ii. The relation between preferences, values and norms is to be analyzed, and the basic causal or other dynamic interactions with emergent attitudes are to be sketched in order to identify potential drivers of science and technology attitudes.
- iii. Methodological approaches to the empirical mapping of existing social values, especially in regard to science and technology, are to be reviewed and critically discussed in order to provide a

more reliable and pertinent mapping of social values in relation to science and technology issues in European publics.

iv. Dominant value sets with special importance for the S&T attitudes of the publics are to be identified among social values.

v. Participatory approaches and existing platforms of science and society dialogue are to be reviewed and critically discussed in regard to their potential contribution and role in eliciting and activating value-based attitudes of publics in pro-active technology assessments and science policy. This relates both to consensus-oriented “value-negotiations” as well as to clear-cut “value-conflicts” and their implications.

vi. An innovative participatory approach that is attentive to social values and carries the potential to develop socially robust outlines and agendas of S&T is to be developed, thereby linking perspectives from social sciences and ethics, which are often being treated completely separately.

vii. Legal, regulatory and other mechanisms, including soft-law (like guidelines), are to be reviewed and critically discussed in regard to their potential to stimulate value-based and value-informed flexible governance and to respond to existing value isobars in European publics.

viii. The basic emergent governance framework is to be tested through two cases: dual-use biotechnologies and security technologies (biometrics in particular). They shall serve as pilot studies for more detailed follow-up research.

In sum, the project aimed at the scholarly clarification of essential aspects tied to the understanding of social values, as perceived from different disciplinary angles, including a philosophical / sociological / political science dimension, a social psychology dimension, a legal dimension and a science-society / participatory dimension. Furthermore, it aimed at knitting these different insights together in a blueprint for a value-informed governance of S&T, including concrete proposals how to implement these insights in actual practice. Finally, the project aimed at pointing to more specific research needs and knowledge gaps related to social values in S&T.

Description of main S & T results/foregrounds

Description of main S & T results / foregrounds of the project Value isobars:

The Value isobars project-partners succeeded in their pre-defined goals and objectives. They conclude the project with a variety of new insights and achievements. All of these achievements are directly related to understanding the challenges for good governance of new science and technology (S&T), in particular but not restricted to the level of EC policy. This challenge was highlighted in the call to which the project responded, for instance in the following text passage:

“In order to address the relationship between science and society through sound policies, the knowledge accumulated in the history, sociology and philosophy of sciences needs to be expanded, consolidated and spread at European level. To this end, scholars from these disciplines should be encouraged to develop transnational research and debates that contribute to the understanding of the participation of science in building a European society and identity.”

In response to this, the project was designed as a multi-disciplinary, and in part inter-disciplinary effort between six partner institutions from six European countries. The work was divided into eight work-packages:

WP1 was to deal with conceptual issues mainly: Value concepts

WP2 was to deal with empirical insights and methods on social values: Value methods

WP3 was to deal with participatory tools that can be employed to improve the societal dialogue about value issues in science and technology: Value dialogues

WP4 was to deal with the legal aspects that surround the governance of S&T and EC science policy: Values and regulations

WP5 was to deal with the two case studies that provided the concrete background for the deliberations on governance of S&T within the project: Ethics in two technologies

WP6 was to deal with the consequences of the insights of WP1-5 for a value-informed governance of S&T: Synthesis

WP7 was to deal with feedback from end-users and dissemination to a wider public: Dissemination

WP8 was to deal the management of the project work: Coordination and management of the project.

Each work-package faced some cross-cutting issues to other work-packages and other disciplines.

The work in WP6 was essentially inter-disciplinary.

Before reporting on the specific insights from the different work packages, we believe it is essential to report the basic and essentially inter-disciplinary understanding that informed the whole work, in particular in WP6.

1. Terminological clarifications:

The project partners realized that the success of the whole project presupposed a common understanding of two basic terms: the notion of ‘values’ and the notion of ‘governance’. It was a striking finding early in the project that in spite of the central role these notions play in scholarly discussions and policy papers, no generally accepted definition seemed to emerge. In fact, in the literature one could find characterizations of these terms that often seemed to contradict each other, or did not make use of other work. It was therefore necessary for the partners to elaborate a common understanding of these terms in order to proceed with the overall goals of the project.

The project’s working definition of values:

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.

The partners added further explications to this definition to clarify further aspects of the above definition:

- 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 centered on 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 judgments. 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.

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 ##### [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 programs (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, labor 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 signaling 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).

Though the above conceptual clarifications were originally conceived of as terminological background for the internal work of the project, the partners hold the conviction that they also provide useful guidance outside the project, for instance in policy papers. This holds especially for the concept of value which often remains notoriously unspecified in research and policy.

- Value isobars identified a need for some terminological clarifications of two central terms: values and governance. It offers in particular its clarification of the term ‘values’ as an improvement in research and policy.

2. Achievement of the project goals and objectives in general terms:

The Value isobars project has made specific achievements in relation to its overall goals and sub-goals as specified in its description of work. The specific achievements are as described below:

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.

This overall goal of the project referred to the collective task in WP6 to formulate a blueprint for a value-informed governance of S&T on the basis of the insights and challenges in the WPs1-5. In other words, the task was to highlight aspects of the work that would carry over to a more general S&T policy.

Work towards this end was performed through four workshops throughout the project period, involving the whole consortium and taking place in Hamburg. The venue and secretarial help was provided by the Altonaer Stiftung für philosophische Grundlagenforschung (ASFPG). Preliminary results from the workshop discussions were distributed electronically to a group selected end-users. This group provided feedback to the discussions which again was included in the discussions of the Hamburg workshops. The group of selected end-users was also invited to the final project conference in Brussels.

On the basis of these deliberations a blueprint for value-informed governance of S&T was elaborated and presented at the final conference in Brussels. In the blueprint of value-informed governance of S&T the traditional scheme of governance 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 in the governance of S&T .

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.

Specifics of the value-informed governance model are outlined in deliverable 6.4 (?????).

2. The study shall provide concrete guidance on implementation issues in relation to improved governance schemes.

The project offered to provide concrete guidance on some crucial implementation issues for value-informed governance of S&T. More concretely, this task involved the identification of measures which would make social values an element included in the cycle of activities from priority setting in research policy to the conduct of research to the innovation and finally the implementation phase. This task was also closely related to the work in WP6, though some of the suggested measures were the outcome of the Wps 1-5. In this summary report we want to highlight four of these measures:

i) The project partners strongly suggest to produce a European S&T 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 task would be to routinely inform the EU Commission, with DG research in particular, members of the European Parliament, and project coordinators under FP/ or higher about the value landscape in Europe, in a way that is adjusted to the typical problems for S&T policy making. In a concise manner it would highlight selected issues as a 2-pager, with brief textual information, accompanied by informative graphics and references to reliable sources. 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 in the project title is 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.

ii) The project partners suggest including a number of carefully prepared participatory exercises with ordinary citizens for the process of setting priorities for S&T policies. In Value Isobars a promising new 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.

iii) The Value Isobars project 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 WP4. They may provide better tools than “hard law” when one has 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.

iv) Given that our efforts of integration of societal value concerns in concrete research projects 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, since valuable insights about science-society relations and value research are often not communicated across projects.

Furthermore, 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. 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.

Achievements in relation to the third project goal:

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.

The project has identified a number of concrete research needs in order to move towards value-informed governance of S&T:

- Empirical research should be undertaken to better cover the interplay of values / value-sets with questions of S&T within the European countries, aiming at a better representation of the cultural and societal variety within Europe.
- Eurobarometers with relevance for the governance of S&T should be more focused, including targeted questioning of value-related issues, and repeated in regular time-intervals.
- Qualitative research on values in relation to S&T should be conducted on a wider scale within the European community.
- Research should be conducted aiming at establishing a European data base for qualitative data on values in relation to S&T.
- Research should be conducted aiming at cross-fertilization between empirical research on values and conceptual, philosophical and normative research on this issue.
- Research should be conducted to develop a practical standard for the measurement of values in relation to S&T. Such an instrument should account for the inter-relation between values and beliefs. The research should aim at explaining value diversity, ambiguity and complexity in the cultural landscape of Europe.
- Research needs to utilize the full range of methods from quantitative to qualitative research and provide a more detailed picture of how individuals in different roles as stakeholders and citizens utilize various value sets and address S&T issues out of different value perspectives that characterize segments of and functions in society.
- Research should be conducted how in practice to avoid the values-as-truism problem by more advanced methods.
- Research should be conducted to utilize sophisticated statistical methods, reviews and meta analyses in order to improve measurement quality, identification of latent values and identification of natural groupings for publicly accessible data sets in relation to values and matters of S&T.
- Research should be conducted to evaluate the short-term and long-term value of participatory exercises of various forms, and in particular to identify to what degree these exercises can elicit deeper values or value-sets of people that guide them in their perceptions of S&T.
- Research should be conducted reviewing previous integrated research projects in different fields and evaluate the amount of integration of social science, philosophy or ethical components in the scientific and technological work. The research should result in best-practice models for further design of integrated projects.

A number of specific research tasks have been put forward from a more philosophical perspective:

- Philosophical research has to focus on developing tools for addressing value conflicts as well as conflicting value traditions in a way that the form of their treatment and possible results that can be accepted by different value traditions.
- Implicit and explicit value judgments in European S&T governance should be made transparent whereby main driving forces of political decisions would become accessible for an open dialogue.
- Philosophical and science studies research should focus on the hypothesis that values are conceived of differently than ethics in the sense of a norms/rule system and what implications of the

replacement of ethics by value discourse would be.

- Research has to focus on the working of different political systems on a local, regional, national and global level and on how they can be amended by mechanisms that allow for better value informed governance.
- Social science and ethics research should develop together new policy tools that explicitly focus on dealing with value conflicts and test them in different political settings. Research can build on existing literature on participation and elaborate specific policy tools for value dialogue on different political levels.
- A systematic study of specific best practice examples on a local, regional and national level with regard to how they solved value conflicts should be undertaken. It can draw on a wide range of literature e.g. from new institutional economics. Research would focus on the way value conflicts are dealt with and make these mechanisms explicit.

The more specific achievements related to the various sub-goals of the project are mainly dealt with in the deliverables of the individual WPs. In particular:

i. The conceptions of the nature and the problematic heterogeneity of social values and the underlying conceptual differences across various disciplines in the humanities, the social sciences and, more and more, also the natural sciences are to be reviewed and critically discussed in order to provide a theoretical framework for further study.

- Here we refer mainly to the various deliverables of WP1.

ii. The relation between preferences, values and norms is to be analyzed, and the basic causal or other dynamic interactions with emergent attitudes are to be sketched in order to identify potential drivers of science and technology attitudes.

- Here we refer also mainly to the work done in WP1, supplemented by parts of the work in WP2.

iii. Methodological approaches to the empirical mapping of existing social values, especially in regard to science and technology, are to be reviewed and critically discussed in order to provide a more reliable and pertinent mapping of social values in relation to science and technology issues in European publics.

- Here we mainly refer to the work done in WP2.

iv. Dominant value sets with special importance for the S&T attitudes of the publics are to be identified among social values.

- Here we mainly refer to the work done in WP2, supplemented by the studies of WP5.

v. Participatory approaches and existing platforms of science and society dialogue are to be reviewed and critically discussed in regard to their potential contribution and role in eliciting and activating value-based attitudes of publics in pro-active technology assessments and science policy. This relates both to consensus-oriented “value-negotiations” as well as to clear-cut “value-conflicts” and their implications.

- Here we mainly refer to the work done in WP3.

vi. An innovative participatory approach that is attentive to social values and carries the potential to develop socially robust outlines and agendas of S&T is to be developed, thereby linking perspectives from social sciences and ethics, which are often being treated completely separately.

- Here we mainly refer to the work done in WP3.

vii. Legal, regulatory and other mechanisms, including soft-law (like guidelines), are to be reviewed and critically discussed in regard to their potential to stimulate value-based and value-informed flexible governance and to respond to existing value isobars in European publics.

- Here we mainly refer to the work done in WP4.

viii. The basic emergent governance framework is to be tested through two cases: dual-use biotechnologies and security technologies (biometrics in particular). They shall serve as pilot studies for more detailed follow-up research.

- Here we mainly refer to the work done in WP5, followed up by WP6.

3. Achievements of the individual work packages:

In regard to the work done in the different work-packages, achievements have been varied and reveal a rich picture of valuable insights. We report individually for the different WPs:

Work-package 1: Value concepts

A. Values: Basic orientation, open to different interpretations and ensuing actions

WP1 revealed that a philosophical analysis of values contributes much to a (more) proper understanding of the normative and evaluative basis for European citizens as well as stakeholders with regard to science and technology (S&T) and its governance. Values are reference points of evaluations which are rationally and emotionally binding, giving long-term orientation and motivation for action. 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 also 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. Acting in accordance with their values they behave in consonance with their own self-conception, in a way they want to see themselves. Values are therefore strong intrinsic motivators. In contrast, as norms have an obligatory character they do not presuppose an inner commitment: The addressees of a norm have to comply whether or not they like it. Therefore, one has to proceed carefully when translating a value into a norm.

B. Values and (normative) Ethics: Necessary relation, strategic differences

With regard to values in S&T, we advanced the hypothesis that in EC and its S&T governance the shift to concepts of enabling and values is accompanied by a side-lining of ethics in a specific sense. Norm-providing ethics is conceived of – and at least in part falsely so – as a restrictive block and permanent trouble-maker. As ethics amongst other things is about analysing and criticising actions and institutions with regard to their moral rightness or goodness, its judgements can indeed restrict and limit the range of possible actions – but it can also open new perspectives and horizons. With regard to the specific understanding of ethics as an alleged ‘troublemaker’, the reference to values seems more promising. Against this background, it seemed very plausible that governance approaches 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. Ethics, on the contrary, might interfere with the help of norms that could regulate or limit sectorial or policy-related interaction processes. However, also value-based governance cannot overcome or bypass the need to set up norms and regulations. But 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.

C. Toward a value-based governance: More than good governance

Preparing for a pragmatically justified theory of values, WP1 investigated the differences and relationship between concepts of “good governance” on the one hand and “value-informed governance” on the other. On the surface, both concepts might appear identical; instead, we argue that their existing normative differences should be considered in the context of S&T governance. The term “governance” is often used in a normative way as signalling a concern with “good governance”. The idea of good governance first evolved within the (value) context of the World Bank which wanted to develop principles that could determine the allocation of loans to developing countries and that had a strong anti-corruption bias. The genesis of good governance conceptions in the context of an international economic institution does not delegitimise the concept as such. 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. While the concept of good governance is mainly concerned with norms that are meant to guide governance processes, it is unclear and merely implicit which values are included.

This observation leads to two main further questions to be addressed in the processes of S&T governance: 1) Which values guide good governance? Here, it was asked which values form the

basis of normative statements about how good governance should be. 2) Whose values are meant to guide governance? Value-informed governance (i.) makes explicit underlying values of good governance principles, whose values formed their basis and the processes by which they became guiding principles and (ii.) offers solutions that open, transparent and more inclusive governance not only allows more social actors to express their values but also ensures that those values can be translated into policy programs. In contrast to the broad concept of “good governance”, the concept of “value-informed governance” stresses the point of sensitivity in regard to the values of participants in governance processes. Ensuring that the values of all stakeholders and other citizens (organised and unorganised) might be voiced and heard within governance process does not say anything about how to deal with values, let alone value conflicts. It even might appear that good governance leads to more value dissent as more stakeholders are involved.

Consequently, this results in a dual focus with regard to S&T. What are the values that guide good governance of S&T? S&T is a highly self-regulating social system. However, politics and business play an important role in shaping S&T. Both spheres interact. A value-based governance of S&T opens up dialogue on underlying values. At the same time, S&T take part in solving social problems and are therefore players in governance processes. While traditionally the sciences have been assigned with the role of contributing a standing knowledge to deal with concrete problems, this (self-) perception changed. Fixed all-cure solutions failed in concrete social contexts because governance processes overlooked value dimensions of people affected by political and technical solutions. In value-informed governance, S&T does not contribute to societal requests by providing fixed knowledge but by developing specific solutions to problems with a specific time-space dimension. This requires an understanding of values involved and suggestions how to deal with value conflicts in two respects: conflicting different values as well as conflicting understanding of (seemingly) the same value. In that sense, value-based governance needs, among others, conceptual and philosophical, clarification as well as extensive deliberation on the ethical norms and decisions to be made in S&T governance.

Work-package 2: Value methods

The objectives were:

- Review of data quality in value surveys
- Comparison of methodological approaches
- Improved survey schemes for value studies

The WP was not charged with suggestions how to improve surveys like the World Values Survey and others since the goals and scopes are very different (although the results of this project might be of interest to such surveys, too). What was aimed at in this project was a detailed analysis of the relationship between values and S&T evaluation. As such, the research goal was to identify what can be learned from general value research and to provide an adapted version for the context of technology perception. Consequently, the outcome will be mainly useful to future research in the domain of technology evaluation that wants to systematically address the concept of values.

Lessons learned

This is what we learned from the review of social scientific research on values and their relationship with science and technology:

- Empirical research on values in the context of S&T is fragmented (based on an ISI search). Out of 4,348 publications from 1956 to 2010, 3,359 were non-empirical papers and 989 were empirical, occupying 23% of the overall body of literature.
- Even in the academic journal ‘Science, Technology and Human Values’ we noted only a small number of publications dedicated to the research of values in science and technology. Since its launch in 1976, it has produced 1,757 publications in total. Only 81 publications include the term ‘values’ in their title, keywords list or abstract, out of which 59 are articles. They address values in the context of governance, research ethics, risk assessment (quality evaluation) and public engagement to explore their intersection mainly with environmental changes, biotechnology and health, information technologies and science and technology in general. Out of the 59 articles, only 27 are empirical studies, out of which only 10 introduce the public in their analysis of values (using different publics as a sample).
- Overall, empirical research (based on the ISI review) seems to be preoccupied with issues on religion, science education, IT and management, while the relationship between public perceptions of technologies and values are rarely addressed.

- Our analysis suggests that the classic psychometric paradigm (values as attitudes held by individuals) seems to be given priority over the anthropological view when studying values. Looking at the historical conditions that drove values research we try to provide some explanations.
- The social, economic, political developments between the two world wars and the periods that followed led scholars to prioritise a humanistic, romantic approach in their study of values. They saw values as means to world peace, democracy and solidarity. They thus sought to create integrative theories that would allow a representative understanding of universal value systems, wherein values as abstract ideals are arranged in opposites (democracy vs communism, individualism vs collectivism). These take a molecular view of values (Himmelweit, 1990), as consisting of distinct measurable units.
- This coincided with psychologists' concerns to establish the scientific status of their discipline as well as of the study of values, which led to a fixation with improving measurement techniques, testing theories and developing research tools able to predict behaviours and attitudes.
- Surveys and experiments were the dominant methodologies and analytical approaches prioritised questions about consistency. These may be suitable for purposes of population representativeness but not of phenomenon representativeness. Hence, questions that explore the conditions under which values and their interrelationships are formulated, constructed, ordered to make sense of new technologies have not been given adequate attention.
- The question of how can we capture the broader and the more narrow values concerns of the public regarding science and technology, becomes a relevant one.
- As societies are marked by a plurality of values, the challenge for the modern republic is not that of a conflict-free existence or the elimination of 'less good' values that will bring technology acceptance, but finding ways to understand and manage competing visions of the good life. We propose an approach that shifts attention from universal truths to pragmatics, to understand how values obtain their meanings and functions in action through the dynamic process of interaction and communication.
- Additionally, in a time of austerity we see the need of taking a realistic approach in research and thus of acknowledging and capitalising on the value of the existing body of empirical knowledge and data on the subject, through new types of analyses rather than data collection.
- We try to outline the implications of these issues in terms of their relevance to methodologies, forms of measurement and analyses and institutional structures that underpin the design and implementation of large scale surveys (such as the Eurobarometer).

An Agenda for Future Research

Methodologies & Analytical Approaches

- If we are interested in studying the broad value concerns across cultures in a representative way, there is a wide range of survey data available which can be used for further analyses (eg. Eurobarometer, WVS, EVS). 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 specific technologies. This will allow us to detect how certain values relate systematically or not to specific technologies and families of technologies. This type of research will also increase opportunities for extensive comparisons, connectivity of different datasets, inter-disciplinary collaboration and more systematic knowledge on values. Such analyses could focus on the some of the following issues and questions:
 - a. What are the relations between values and specific technologies or families of technologies? When does a technological development become an issue for the public? Not all technologies pose dilemmas e.g. life sciences versus IT. Can specific values or value sets in the context of a specific technology help us frame conflicts with other technologies?
 - b. Can we identify values that could provide new insights on the relation between an existing controversial technology and the public? E.g. recent example of Greenpeace (green values) and EU court of Justice deliberation on stem cell patenting.
 - c. What core goals are involved in different technologies (values as ideals)? And how do these change in the context of different implementations (e.g. regulation, applications) for different groups (operative values)?
 - d. Which groups are relevant to include when researching about public perceptions of different technologies? There is a need for exploratory and probabilistic analyses that do not classify groups a-priori but rather attempt to uncover the types of values that carry common or different meanings for

social groups (forced choice questions can be used to identify groups)

e. Researchers tend to overemphasise the use of factorial analyses to study values by collapsing them to single dimensional continuums. However, with this method we lose substantial information about the nature of each value distinctively. It will be useful to explore other types of analyses that treat values as categorial rather as continuous variables (e.g. latent class modeling).

- Longitudinal studies are also absent from the field. There is little knowledge on how values in the context of science and technology have changed or remained the same over time. “Security” is an example of a value that has evolved over the last decades, from a restrict notion to the broad, encompassing meaning of our days. Hence, analyses of existing datasets at different points in time (e.g. the EVS and the WVS run since 1981) should allow us to map the changing value concerns of the public over time and cross-culturally in relation to different technologies and facilitate the forecasting of public attitudes. This has implications on the design of future studies, which need to ensure a consistency in the formulation of questions across their different waves.
- Piloting is a labour intensive, extensive and complex stage in the research process, which yet is crucial and needs to be given the proper attention. When it comes to cross-cultural survey development, piloting in all participating countries is important to explore issues preoccupying the publics, which can vary across countries, identify relevant groups to be sampled, test the impact of different modes of data collection (e.g. face to face interviewing, telephone, postal, internet surveys) on response rates and biases, and evaluate the cultural, practical and theoretical base of the use of different measures, question formats (e.g. rating versus ranking) over others.
- If we are interested in studying the values of specific social groups and stakeholders, then representativeness is not a relevant priority. Surveys need to be complemented with other methods. Qualitative methods are thus appropriate, which allow us to engage with a plurality of perspectives. Again we can find such data available, which span across different disciplines and themes (eg. ESDS). Further analyses and syntheses of findings can validate quantitative findings, allow an integrated examination of different dimensions of complex phenomena, provide insights into how specific groups use values to resolve dilemmas and make sense of technologies and offer policy makers useful cues of how to respond to different value conflicts. Stakeholders’ values can be studied through the collection and analysis of available documents such as policy documents, reports, opinion pieces and parliamentary debates. Expert interviews could be used as foresight tools, to identify new controversial technologies. We see important benefits associated with an in-depth exploration of existing data, so the European Commission can prioritise funding for projects on secondary data analyses and datasets synthesis and integration.
- Research shows that individuals’ value concerns tend to vary depending on the life domain to which they pertain. We thus see the need for surveys to unearth the differences in value sets between individuals acting as various types of stakeholders (e.g. farmers, activists, NGOs, scientific community etc.) or those not affiliated with an organized stakeholder group. In order to address the more specific value concerns in a representative way, in future value surveys we can include more detailed questions on people’s involvement in interest groups. These value surveys should also allow us to see how peoples’ value priorities change or not depending on the role they take in different domains in life.
- Nomothetic, inductive approaches have dominated the study of values, seeking to confirm or disprove existing theories and results and assume the a-priori empirical relevance of different groups for the researcher’s conceptual framework. We propose to complement these approaches with an exploratory, abductive approach of research (Pierce, 1931-1958; Salvatore & Valsiner, 2010). This emphasises discovery and interpretation and uses local phenomena and single events as the points of departure and the means to transform them into a theory (i.e. looking what kind of rule would generate an outcome). It is relational that acknowledges the interdependence between the local event, the context and the implications this has for (theory) generalisation. ‘Theory and evidence are circularly bonded within an open-ended cycle’ (Salvatore & Valsiner, 2010: pg 828). Such inquiries enable researchers to test the local phenomenon, elaborate the theory to facilitate generalisation, expand the domain of application of the general theory to new phenomena, and differentiate the study of the phenomenon from new cases. Researchers need to accept that the exploration of social phenomena and in this case values may force them to review their theories and hypotheses if they do not fit their findings.

Institutional Structures

Insofar as empirical research is also a social phenomenon, where does the public fit in this? In this

sense, the social does not only come in engagement exercises. So what practices are invited to encourage a dialogue between researchers and the public and at the same time ensure quality in the research design and implementation? We thus see the inclusion of experts in every step of the design and implementation of a study as a prerequisite. For they are better equipped to make decisions about design, sampling methods, question formats, piloting and the like and ensure transparency and procedural clarity through detailed descriptions of research procedures. This is a challenging task that takes time but opens the doors to a more rigorous and accountable research to the public, different researchers and policy makers. The recruitment of such a group of experts from different disciplines and countries needs to be given appropriate merit.

Work-package 3: Value dialogue

WP3 has provided an overview of different participatory methods to engage stakeholders and the public in value questions related to science and technology. Many of the methods are known from (parliamentary) technology assessment, and some are widely discussed in the literature. Only some of these instruments were deemed to be suitable for a practical exercise to explore societal values. In particular the consortium has deemed it suitable to explore "values for a common good", which are inherently difficult to explore and only very little practical experience is published. In order to explore new methods to gauge "values for a common good" the WP has conducted a combined exercise of Multi-Criteria Mapping and Student Parliament at a school in Wiener Neustadt, a town at the outskirts of Vienna, in September 2010. Roughly 50 students participated and discussed both the issue of biometrics and the issue of dual use in relation to biotechnology (biosecurity) and subsequently interviews with a subset of the students were conducted. The results of this exercise were then analyzed and a report was written up as a deliverable.

During the second project period WP3 has revised and adapted the protocol for the participative method Value Dialogue Science Parliament (VDSP) according to the experiences of the first test during period. This refined version was tested with 50 participants in June 2011 – again with the two case studies “Biometrics - Security or Surveillance Technology?” and “Dual Use Dilemma in Pathogen Research”. The participants developed scenarios for both technologies and collected criteria to assess these scenarios (e.g. freedom, safety/security, social justice). During value discussions the participants reflected their understandings of these criteria or values, and shared and oppositional standpoints were identified. Relevant values and crucial value trade-offs were systematically collected with the decision making tool multi criteria mapping. Hierarchies in the participants' sets of values were identified. The VDSP participants wrote resolutions including (a) facts, (b) justification (clarifying goals, thesis and rationale) and (c) demands and recommendations. Representatives of the VDSP participants handed the resolutions to the President of the Austrian National Council.

The analyses of the two case studies have been summarized in a report and the protocol for the VDSP has been used to develop a manual for this participatory exercise.

Work-package 4: Values and regulation

The Value Isobars project assumed that a value-based approach to EU governance of science and technology (S&T) requires consideration of the role of Law and Regulation as vehicles for furthering the values elected by the European legislator as ideals to pursue or criteria to guide legal norms regulating research and development (R&D).

Based on this assumption, research under WP4 centred on two main topics: firstly, the centrality of values in the EU legal order and its bearing on policy and legislation shaping specific S&T fields; secondly, the relative roles of hard law, soft law and self-regulation as regulatory tools for R&D. Considering that the Treaty of Lisbon and the newly binding Charter of Fundamental Rights lent a new impulse to the consideration of fundamental values by the EU, we sought to appraise the ways that certain values rendered explicit through the Treaty and the Charter are being construed in the context of EU policy and law for biometrics and for human cloning. We concluded that the ways in which the relevant principles and rights are being defined and balanced owes to a great deal to the ways that the EU is pursuing its political and policy goals. In respect of biometrics in particular, R&D priorities, and those of security policy, have tended to prevail over ethically or morally based legal claims, e.g. those related to freedom and privacy or democracy. Likewise, the ways chosen by the drafters of the Charter to overcome the controversy on whether to ban human cloning absolutely

or only for reproduction, by leaving it ambiguous, appears to have been designed to respond to public outcry about human cloning, while not raising insurmountable obstacles to stem research and potential therapeutic applications of cloning.

We concluded that an effective defence and promotion of fundamental principles and human rights as part of a value-based governance of S&T would depend greatly on the extent to which EU law-making processes address the values at stake in a more explicit manner, and in ways that meet European citizens' legitimate expectations. Effective channels should be considered for stakeholders and civil society to have a say in the regulation of technological innovations and convey their views on the benefits and risks involved as well as on moral implications of S&T.

In the EU, the need for elasticity to tackle technologies progressing at a fast rhythm, and involved in complex uncertainties (economic, social, environmental, etc.) triggered recourse to soft law and self-regulation, also believed to allow for greater dialogue and participation of stakeholders and the public. The EC recommendation on a code of conduct for Nanosciences and nanotechnologies (2007) is a case in point: the recommendation represented a deliberate "effort to integrate the societal dimension into R&D" and "to involve all stakeholders" at this emerging stage of the field. Yet, as industrial applications of nano S&T (e.g. to cosmetics, and novel food) spread, EU legislation is being called upon to ensure the required safety controls, possibly limiting the scope for public involvement. Other illustrations (human cloning, biometrics, etc.) indicate that soft law is being used primarily as a preparatory or opening stage for hard law. In turn, self-regulation is being promoted by the EU mostly as a complementary means to further implementation of EU legislation: in other words, both work as preliminary or complementary stages of hard law; besides, they often are grounded or dependent upon EU legislation, the latter yielding them their authoritative force. Currently, hard law seems to prevail despite the institutional European discourse encouraging alternative forms of regulation under the Better Regulation Agenda. The confidence required in contentious fields, combined with concerns for lack of transparency surrounding some soft law instruments stand among the reasons for the prevalence of hard law in EU S&T regulation.

Reaching the appropriate equilibrium between soft law, hard law and self-regulation, and democratic enactment, namely in view of protecting fundamental rights, is one of the main challenges facing European S&T regulation today.

We would recommend that, in order to make the best use of available regulatory tools in light of various circumstances and needs, recourse to soft law and self-regulation should seek to comply, as hard law, with the requirements of a value-based governance, namely respect for fundamental rights and public participation.

Work-package 5: Ethics in two technologies

Value dilemmas in dual use of pathogens and in biometrics technologies

Both case scenarios are linked to the issue of terrorism and security. A crucial difference between biometrics and dual use is that biometrics is claimed to be well-regulated while dual use is not. Biometrics is also quite well-defined, but dual use has many different definitions. In the one case area (biometrics), it is relatively clear which values are contested, in the other (dual use) it is not quite clear which values are at stake, since this seems crucially to depend on the problem framing.

For WP5 the task was to reconstruct which values are at stake in both areas. This task was performed in the deliverables to the project.

On a general level we include the abstracts of basic insights concerning these two technologies.

A. Biometrics:

Biometrics may aid in countering threats of terrorism and they may aid in identifying criminals. They may also aid in avoiding mistakes in an increasingly complex health care system. They can facilitate in making access restriction to sensitive research materials more watertight, and help protect the interests of industry and corporate business. Still, all these beneficial applications come at a risk, specifically with regard to the justification of the proposed use, and with regard to whether one can contain their use to its proper and intended purposes. Passengers name records and other biometrics data are retained for anti-terrorist purposes, but this may be damaging to the privacy of the

individuals concerned. As a result, the discourse on biometrics technologies has increasingly emerged as a tension area between security and privacy. In the private sector, uses of personal data that potentially also pose a threat for personal privacy. Problems include multiple uses of data collected by private companies such as banks, insurance companies and uses of information for marketing purposes. And although the consequences of misuse of data for security purposes are often seen as more problematic, commercial misuse of biometrics data is also widespread a problem: abuse of biometrics data include unauthorised disclosure of medical information or unauthorised use for targeted advertisement. The tension between the right to privacy and issues of security emerged as the most dominant field of concern in the past ten years. Due to the dominance of these values and the perceived conflict between the two, other moral aspects of the introduction of biometrics technologies in various areas have been neglected.

Please note that an extract from our prototype of a European Science and Technology Value Atlas is attached as a pdf document to this report (Deliverable 6.4.b).

B. Dual use in pathogen research:

WP5 dealt with the conceptual and ethical dimensions of the dual use of science and technology innovation and its governance, in particular in relation to pathogen research. Although the term dual use and the related problems are not new, there is growing concern about dual use in Europe. This is mainly due to a number of recent developments in public security and security-related technologies, and specifically the debate about international terrorism and related threats has had a significant impact on the discussion of the issue. An analysis of different conceptualisations and meanings of dual use, and a discussion of the respective implications were provided. Then the major ethical concerns related to the dual use discussion were laid out. On this background the WP5 articulated the relationship between these concerns and identifiable underlying values, which themselves appear to be partly complementary and partly contradictory. Based on these analytical steps, we addressed major issues with regard to the question of how governance of science and technology in Europe should take into consideration the value dimensions of dual use.

The central moral question that emerges from the debate on dual use is to what extent one is to limit a primary activity for certain purposes because of a perceived risk of secondary purposes (be they 'bad' purposes or merely purposes not primarily intended or desired by the researcher or research group in question). This question is gradually becoming obscured by the non-articulate shift in meaning of the concept. It seems that choices made around the definition of dual use are essentially political choices. This raises the question of who is a legitimate definer of dual use, and which definitions are really productive and which definitions obscure what is actually at stake. In this sense, the ambiguous nature of dual use as a concept is part of the problem of making sense of it in an academic situation.

Innovation in the bio-medical sciences comes under an increasingly rapid pace. This calls for an adaptive pluralist approach. Expertise is ever changing as disciplinary boundaries are being torn down and rebuilt in unexpected and unpredictable ways. Knowledge is no longer the expertise of one individual researcher, not even of one discipline, but of a multifaceted range of disciplines. Issues of dual use are therefore necessarily connected to issues of multi-, inter- and trans-disciplinarity. Relevant disciplines include microbiology, virology, molecular genetics, immunology, infectious diseases, immunology, nano-technology, veterinary medicine, but also specialists in agri-, nutri- and aqua-related research. Tackling dual use issues means that it is necessary to involve specialists in security, legislation, risks assessment, psychology and mass psychology. It also demands an involvement of different stake- and shareholder groups in society. It entails a cooperation between scientific professional, civil, military and humanitarian organisations. Simplified binary oppositions on all levels tend to blur the complexity of the problems. At the same time, reference to plurality and relativity of values as well as perspectives is as clear-cut as it is a non-starter for helpful governance advice.

The general nature of both areas poses some problems, since it is in the specific practical cases that one will encounter specific relevant values. Still, it is possible to sketch out some general tendencies. WP5 aimed to study two case areas in order to be able to address value-related issues in both scenarios, and on this basis draw lessons for a value-based approach to governance. In its research to both areas, the following general distinctions sprang out:

The ethical aspects in the area of dual use are very different from those that arise with regard to biometrics. The problem is that dual use is ill-defined, but also that as far as it is defined, it is hardly clear what values are at stake at all. Superficially speaking, dual use seems to imply an issue of unpredicted use of scientific research and the ensuing technological advances (health research yielding military uses and vice versa, reconstructive research to the Spanish flu yielding potential for bioterrorist uses etc.). In that case, the main objective for policy makers in trying to avoid morally problematic uses of science and technology seems to be one of creating a structure in which future uses can be controlled, predicted, contained. Then the issue would be that this would seriously restrict academic freedom. But if one looks at the deeper significance of dual use, other issues arise, including:

- What do we consider illegitimate?
- Whom do we consider ‘terrorist’, and why?
- Doesn’t exclusion from the negotiation table lead to radicalisation?

To be able to tackle value-related issues of dual use in the development of medical research, one needs to take into account such issues as well.

In the case of biometrics, it is quite clear what values are at stake. Biometrics is very much an issue of safety versus privacy. More in detail, this includes the following issues:

- Psychological problems of feeling surveyed (a virtual panopticon)
- Avoidance of surveyed spaces
- Privacy in the public space
- False reliability, ritual senses of security
- Mistaken identity and its consequences
- Oppressed groups

The impact of the introduction of different biometrics technologies is however unclear, and the consequences on how society changes may be enormous. Security may become a goal in itself, rather than an instrument to prevent specific harms, an effect may be a shift in the mentality of governments and societies towards a surveillance-society.

Work-package 6: Synthesis

The specific objectives of this WP were:

- Review of difficulties of value based governance of S&T
- Approaches to understanding social values in Europe
- Recommendations concerning further research needs
- A blueprint for a value based governance of S&T.

This WP has started its work six months after the other WPs. The major task was to examine the results of WPs 1-5 and to relate them to the overall objectives of the project. In practice the WP6 operated mainly through the preparation, conduct and summarizing of the Hamburg meetings in the facilities of the Altonaer Stiftung für philosophische Grundlagenforschung (ASFPG). This foundation supported the project through the provision of a venue and secretarial help for the meetings. The intermediate results of the workshops were sent to the group of end-users as a series of (3) communications. The first communication introduced the topic of the project, including a lengthy section of terminological issues, followed by the specific challenges to good governance relating to the two case studies (biometrics and dual use in pathogen research). The second communication presented the first list of ideas of possible measures for improving existing governance of S&T. The third communication was then basically presenting the draft results that the project would be presenting at its final conference and deliver as blueprint for a value-informed S&T governance. Some crucial difficulties of existing governance of S&T were perceived as being coupled to the following factors, which together circumscribe the problem situation for WP6:

- Techno-scientific developments, particularly in fields that are tagged as “frontier science”, are subject to strategies of S&T policies at different levels: at the level of research institutions, funding organisations, national S&Y policy, and international cooperation and policies of supra-national bodies like the EU.
- Policy-makers have learned that all such policies are crucially dependent on their social acceptability, i.e. unless they exhibit a certain social robustness over time one risks investments that may be doomed to lead to unwanted innovations.
- While the apparent reasons for public scepticism about certain innovations and S&T developments may be varied – depending on the technology in question -, scepticism regarding novel technologies

often stems from what people value and what they want to protect. Social values may thus form the ultimate ground for debates on what sustainable innovation and a good S&T development is.

- Thus, when designing long-term S&T policies one needs to take account of these social values and seek either a better harmony with them or alternatively critically confront these values in a science-society dialogue. So far, policy makers have very little helpful information on how to do this.

Given this perception of the problem situation, and given the inter-disciplinary discussions during the Hamburg workshops, and furthermore given the communications with the end-users, WP6 then produced the principal responses to the overall objectives of the project. The content of the WP6 responses was described above under the section dealing with the three overall goals of the project. They included in particular the blueprint of a value-informed governance of S&T, specific guidance for implementing such a model of governance, including the suggestions for a number of novel measures, and suggestions for future research tasks.

WP7 dealt with dissemination activities, the nature of which is reported in the next section of this Final report.

WP8 dealt with management and coordination issues, and specifics of this were reported in the first and second periodic report of the project.

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Potential impact and main dissemination activities and exploitation results

The Value-Isobars project aimed at a better understanding of social (and thus by extension: ethical) values in the context of science and technology governance and policy. It has provided a blueprint of

value-informed governance of science and technology, and recommendations for further research needs. One of its specific outcomes is the proto-type of a Value-Atlas for science and technology governance and policy.

Given this background, the potential impact of the project results can only roughly be indicated at this point in time, since a lot depends on further dissemination to intended user-groups. The project partners are actively engaged in further disseminating project results and insights to various audiences. Information about the project has been spread to academic peers (through scientific publications), research councils (e.g. in Norway), to scientific audiences (at various conferences and newsletters) and (forthcoming in Estonia in 2013) to highest political levels. Dissemination channels included scientific publications, popular publications, video-presentations and leaflets (Value-Atlas). Since different target groups face different challenges of S&T policy, their potential uses of the project results are difficult to predict.

We shall, however, indicate some potential impacts of the project:

- (re: decision support): The prototype of the Value-Atlas is hopefully to inspire and encourage a regular publication of a similar format. Its function is to address issues of current concern and relate them explicitly to values as they are held in various societies. The target groups are 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 the Atlas would highlight selected issues as a 2-pager, with brief textual information, accompanied by informative graphics and references to further sources. The project partners believe that a European publication would be the most adequate for the given purpose.
- (re: research needs): The Value Isobars project stressed 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? The project has identified concrete research needs in order to improve this information gap. One of them is the need to better identify the roles out of which citizens judge scientific and technological developments. Another is the problem of how to overcome value fragmentation through deliberations across value pluralism. Thus, one possible impact of the project is the specification of these value-related research needs in forthcoming calls for research projects, both in relation to European research and in relation to national research.
- (re: foresight): One basic tenet of the project is that the current focus on ethical issues in European research projects needs to be widened into a more encompassing focus on social values in relation to the research. «Ethics» is typically perceived as setting limits, while this is problematic in an EU context since it only amounts to a minimum set of standards agreed to by all members. All other ethical issues remain the remit of the national governments. Thus, a focus restricted on ethics ends up as the least common denominator between states. On the other hand, it is the possible conflict with social values that needs to be negotiated and explored in the course of gaining new knowledge and working towards innovation. So far, this is done hesitatingly and incompletely. A focus on social values also implies integration of more descriptive empirical research, utilizing advanced social science methods. Furthermore, the complex landscape of social values calls for treating social values in sets, rather than monolithically. The project partners see this as a valuable amendment to current foresight techniques which often guide the priority setting in S&T policy. Rather than constructing future scenarios on the basis of (economic) drivers and uncertainties alone, the differentiation of value landscapes should explicitly enter the scenarios of such foresight analyses. This also implies a turn from a restricting posture (as currently with the ethics focus) towards a more enabling posture, i.e. towards viewing values as positive guides for development.
- (re: integrated projects governance): The project partners also observed a lacking integration of value aspects into on-going research projects. Typically, ELSI and social science components are seen as an independent addendum, rather than an integrated part. In actual practice, this runs counter to the intentions of integrated projects. Yet, apparently the problems often result from communication, management and organisation in these projects. The role of these components could be strengthened by best-practice models which are set to help organize these projects. It is the value-aspects of the research and its intended outcomes which play a crucial role in the design of best-practice, since values carry with them an understanding of basic goals in social settings.
- (re. public engagement): Current ELSI and social science components in larger research projects often carry with them participatory exercises with stakeholders. The range of such participatory tools is arguably wide and varied. Many or most are derived from experiences in technology assessment

(TA). The project partners claim that many of these participatory tools remain on the level of explicating interests and conflicts of interests, while very few are designed to account for the complexity of value landscapes that surround our S&T debates. Yet, in the long run it is precisely the grip on the dynamics of these value landscapes that will be crucial for understanding how S&T developments will be received by and integrated into social realities. The project has therefore conducted a participatory pilot study focused on the complex value landscapes. Further methodological development of participatory engagement of larger segments of the public with value focus is therefore one of the aspirations of the project. New media like the internet should be more actively employed, as e.g. pointed out in our sister project Technolife.

- (re: governance tools): Value Isobars has pointed to the difficulty in viewing regulatory, i.e. binding legal measures as sole instruments of good governance of S&T. The dynamics of S&T development reveal a basic dilemma: either binding regulatory measures lag behind the actual development and do not reflect the scope of such developments, or they impose restrictions on developments and risk to block further positive developments. This follows from the intrinsic demands of such regulatory measures, namely the need to specify developments in terms of technical features. Yet some lines of research are obviously in need of good guidance for further developments. Again it is a focus on values that may provide a way out. Soft-law mechanisms are designed to explicate the protection of basic value sets. The Value isobars project thus encourages the use of soft-law instruments in S&T policies, and sees an important role for them in some of the fields which currently move fast forward, but at the same time call for a heightened awareness in relation to possible conflicts with social values.

- (re: global policies for S&T): Ethical issues and social values are typically framed within a given historical, cultural, political and societal context. As argued earlier, even within these contexts decision makers are poorly informed about the value landscapes they are dealing with. But science and technology cross all borders and has global consequences. Science is a global enterprise. Thus, one of the central issues is the scope of responsibilities in relation to our policies and S&T developments. This is not a question that can be resolved by empirical research alone. It addresses a basic normative issue which in the end resides within the democratic fabric of our societies. While policy makers are not short on paying lip service to global development goals like sustainability and equity, the translation of these goals into concrete policies, and in particular the resulting responsibilities for our S&T policies, is still problematic. Global governance of science and technology in the light of value pluralism calls for an enlightened democratic debate on normative commitments and responsibilities for S&T policies. An apparent conceptual problem is assumedly the realisation how value pluralism still may be action guiding and imply valid normative recommendations. As indicated in some of the more specific project results, this problem loses some of its difficulty when moving from singular values to value landscapes with complex characterisations of values. In regard to S&T policies, normative outlooks on global responsibilities of science need to enter a democratic debate.

- (re: critical inputs on biometrics and pathogen research): The value isobars has studied two cases of scientific / technological development in greater detail, namely biometrics and dual use in pathogen research. In both cases the project notes that debates about them seem unduly restricted in terms of the value dimensions involved. In biometrics a focus on envisaged trade-offs between privacy and security does not do justice to the complexity of values that come into play (e.g. trust). In relation to dual use in pathogen research a salient feature is the relatively large agreement on values like academic freedom and public security, while the possibility to engage relevant actors through internationally agreed soft-law mechanisms seems neglected. The project partners hope that this is taken as a constructive criticism to move these debates forward towards recognition of the complex interplay of social values in these developments.

The above points indicate some of the potential impacts of the Value isobars project, given a proper further dissemination of its results. Other, more indirect impacts are certainly not excluded from this list.

Address of project public website and relevant contact details

The public website address of the project is:

www.value-isobars.eu .

More information on the project can be obtained by contacting the project coordinator Matthias Kaiser at:

matthias.kaiser@svt.uib.no .



4.2 Use and dissemination of foreground

Section A (public)

Publications (peer reviewed)

LIST OF SCIENTIFIC (PEER REVIEWED) PUBLICATIONS, STARTING WITH THE MOST IMPORTANT ONES											
No.	DOI	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Date of publication	Relevant pages	Permanent identifiers (if applicable)	Is open access provided to this publication ?
1		“Governance addressing societal values”	Almaas, Vibeke & Kaiser, Matthias	Global food security: ethical and legal challenges (C.M.Romeo Casabona, L.E.San Epifanio, A.E.Cirion	2010; Book, conference papers ISBN: 978-90-868 6.154-5	Wageningen Academic Publishers	Wageningen	25/09/2010	269-274	ISBN: 978-90-868 6.154-5	Yes
2	10.1038/nbt.177 1										Yes
3	10.2777/23393										Yes
4	10.1111/j.1468-5914.2011.00470 .x	The role of plurality and context in social values	Tsirogiann i, S., & Gaskell, G.	Journal for the theory of social behaviour	41 (4)			14/06/2011	441-465		No
5	10.3921/978-90-8686-753-0	The value(s) of sustainability within a pragmatically justified theory of values: considerations in the contetx of climate change	Roman Beck, Simon Meisch, Thomas Potthast	Climate change and sustainable develoment	2012	Wageningen Academic Publishers	Ther Netherlands	31/05/2012	49-54		No
6	10.3921/978-90-8686-753-0	Towards a value-reflexive governance of water	Simon Meisch, Roman Beck, Thomas Potthast	Climate change and sustainable develoment	2012	Wageningen Academic Publishers	The Netherlands	31/05/2012	413-418		No
7	10.1016/j.clsr.2012.03.012	Security, privacy and freedom and the EU legal	Maria Eduarda	Computer Law & Security Review	28	Elsevier		21/05/2012	320-327		No

		and policy framework for biometrics	Goncalves, Maria Ines Gameiro								
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LIST OF DISSEMINATION ACTIVITIES								
No.	Type of activities	Main Leader	Title	Date	Place	Type of audience	Size of audience	Countries addressed
1	Conference	UNIVERSITETET I BERGEN	"Governance addressing societal values"	17/09/2010	EurSafe 2010 Conference 16-18.09.2010	Scientific community (higher education, Research)	80	EU
2	Presentations	EBERHARD KARLS UNIVERSITÄT TUEBINGEN	„Value Isobars – Europäische Wertelandschaften?“	14/06/2010	University of Tübingen	Civil society	40	Germany
3	Conference	DINAMIA CENTRO DE ESTUDOS SOBRE A MUDANCA SOCIO ECONOMICA	"EU technology regulation: experts and ethics"	25/06/2010	Fifth Pan-European Conference on EU Politics 23-26 June 2010; Porto, Portugal	Scientific community (higher education, Research)	80	EU
4	Web sites/Applications	UNIVERSITETET I BERGEN	Minutes and reports on website	30/09/2011	www.valueisobars.eu	Medias	100	European
5	Videos	UNIVERSITETET I BERGEN	"Åpningsfilm Christie konferansen 2012" ("Opening video Christie conference 2012")	25/04/2012	Bergen; see also at: http://vimeo.com/40922275	Scientific community (higher education, Research) - Industry - Civil society	500	Norway
6	Articles published in the popular press	UNIVERSITETET I BERGEN	"Good governance and the H5N1 debate", by: Matthias Kaiser	15/06/2012	London	Scientific community (higher education, Research) - Civil society	3900	United Kingdom
7	Conference	DIALOG GENTECHNIK	Book of abstract, Quality, honesty and beauty	18/04/2012	Florence, Italy	Scientific community (higher education, Research)	250	EU
8	Publication	UNIVERSITETET I BERGEN	Verdier i focus: et forskningspolitisk forslag	01/10/2012	Forskningspolitikk	Scientific community (higher education, Research) - Civil society - Policy makers	7500	Norway

9	TV clips	UNIVERSITETET I BERGEN	Kunnskapskanalen Vitenskapshvelvet; program on NRK	http://tv1.kunnskapskanalen.no/serie/kunnskapskanalen/mdfp170061363	2012	15000	Norway
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Section B (Confidential or public: confidential information marked clearly)

LIST OF APPLICATIONS FOR PATENTS, TRADEMARKS, REGISTERED DESIGNS, UTILITY MODELS, ETC.					
Type of IP Rights	Confidential	Foreseen embargo date dd/mm/yyyy	Application reference(s) (e.g. EP123456)	Subject or title of application	Applicant(s) (as on the application)

OVERVIEW TABLE WITH EXPLOITABLE FOREGROUND

Type of Exploitable Foreground	Description of Exploitable Foreground	Confidential	Foreseen embargo date dd/mm/yyyy	Exploitable product(s) or measure(s)	Sector(s) of application	Timetable for commercial use or any other use	Patents or other IPR exploitation (licences)	Owner and Other Beneficiary(s) involved
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ADDITIONAL TEMPLATE B2: OVERVIEW TABLE WITH EXPLOITABLE FOREGROUND

Description of Exploitable Foreground	Explain of the Exploitable Foreground
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4.3 Report on societal implications

B. Ethics

1. Did your project undergo an Ethics Review (and/or Screening)?	No
If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final reports?	
2. Please indicate whether your project involved any of the following issues :	
RESEARCH ON HUMANS	
Did the project involve children?	No
Did the project involve patients?	No
Did the project involve persons not able to consent?	No
Did the project involve adult healthy volunteers?	No
Did the project involve Human genetic material?	No
Did the project involve Human biological samples?	No
Did the project involve Human data collection?	No
RESEARCH ON HUMAN EMBRYO/FOETUS	
Did the project involve Human Embryos?	No
Did the project involve Human Foetal Tissue / Cells?	No
Did the project involve Human Embryonic Stem Cells (hESCs)?	No
Did the project on human Embryonic Stem Cells involve cells in culture?	No
Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos?	No
PRIVACY	
Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	No
Did the project involve tracking the location or observation of people?	No
RESEARCH ON ANIMALS	

Did the project involve research on animals?	No
Were those animals transgenic small laboratory animals?	No
Were those animals transgenic farm animals?	No
Were those animals cloned farm animals?	No
Were those animals non-human primates?	No
RESEARCH INVOLVING DEVELOPING COUNTRIES	
Did the project involve the use of local resources (genetic, animal, plant etc)?	No
Was the project of benefit to local community (capacity building, access to healthcare, education etc)?	No
DUAL USE	
Research having direct military use	No
Research having potential for terrorist abuse	No

C. Workforce Statistics

3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).

Type of Position	Number of Women	Number of Men
Scientific Coordinator	0	1
Work package leaders	2	5
Experienced researchers (i.e. PhD holders)	2	6
PhD student	3	3
Other	4	1

4. How many additional researchers (in companies and universities) were recruited specifically for this project?	9
Of which, indicate the number of men:	3

D. Gender Aspects

5. Did you carry out specific Gender Equality Actions under the project ?	No
6. Which of the following actions did you carry out and how effective were they?	
Design and implement an equal opportunity policy	Not Applicable
Set targets to achieve a gender balance in the workforce	Not Applicable
Organise conferences and workshops on gender	Not Applicable
Actions to improve work-life balance	Not Applicable
Other:	
7. Was there a gender dimension associated with the research content - i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?	No
If yes, please specify:	

E. Synergies with Science Education

8. Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?	No
If yes, please specify:	
9. Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?	No

F. Interdisciplinarity

10. Which disciplines (see list below) are involved in your project?	
Main discipline:	5.4 Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary , methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].
Associated discipline:	6.3 Other humanities [philosophy (including the

	history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other SIT activities relating to the subjects in this group] .
Associated discipline:	5.1 Psychology

G. Engaging with Civil society and policy makers

11a. Did your project engage with societal actors beyond the research community? (if 'No', go to Question 14)	Yes
11b. If yes, did you engage with citizens (citizens' panels / juries) or organised civil society (NGOs, patients' groups etc.)?	Yes - in implementing the research
11c. In doing so, did your project involve actors whose role is mainly to organise the dialogue with citizens and organised civil society (e.g. professional mediator; communication company, science museums)?	Yes
12. Did you engage with government / public bodies or policy makers (including international organisations)	Yes, in communicating /disseminating / using the results of the project
13a. Will the project generate outputs (expertise or scientific advice) which could be used by policy makers?	Yes - as a primary objective (please indicate areas below multiple answers possible)
13b. If Yes, in which fields?	
Agriculture	No
Audiovisual and Media	No
Budget	No
Competition	No
Consumers	No
Culture	No
Customs	No
Development Economic and Monetary Affairs	No
Education, Training, Youth	No
Employment and Social Affairs	No
Energy	No
Enlargement	No
Enterprise	No
Environment	No

External Relations	No
External Trade	No
Fisheries and Maritime Affairs	No
Food Safety	No
Foreign and Security Policy	No
Fraud	No
Humanitarian aid	No
Human rightsd	No
Information Society	No
Institutional affairs	No
Internal Market	No
Justice, freedom and security	No
Public Health	No
Regional Policy	No
Research and Innovation	Yes
Space	No
Taxation	No
Transport	No
13c. If Yes, at which level?	European level

H. Use and dissemination

14. How many Articles were published/accepted for publication in peer-reviewed journals?	7
To how many of these is open access provided?	3
How many of these are published in open access journals?	2
How many of these are published in open repositories?	1
To how many of these is open access not provided?	4
Please check all applicable reasons for not providing open access:	
publisher's licensing agreement would not permit publishing in a repository	No
no suitable repository available	No
no suitable open access journal available	Yes
no funds available to publish in an open access journal	No
lack of time and resources	No

lack of information on open access	No
If other - please specify	
15. How many new patent applications ('priority filings') have been made? ("Technologically unique": multiple applications for the same invention in different jurisdictions should be counted as just one application of grant).	0
16. Indicate how many of the following Intellectual Property Rights were applied for (give number in each box).	
Trademark	0
Registered design	0
Other	0
17. How many spin-off companies were created / are planned as a direct result of the project?	0
Indicate the approximate number of additional jobs in these companies:	0
18. Please indicate whether your project has a potential impact on employment, in comparison with the situation before your project:	Difficult to estimate / not possible to quantify, None of the above / not relevant to the project
19. For your project partnership please estimate the employment effect resulting directly from your participation in Full Time Equivalent (FTE = one person working fulltime for a year) jobs:	7

I. Media and Communication to the general public

20. As part of the project, were any of the beneficiaries professionals in communication or media relations?	Yes
21. As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public?	No
22. Which of the following have been used to communicate information about your project to the general public, or have resulted from your project?	
Press Release	Yes
Media briefing	No
TV coverage / report	No
Radio coverage / report	No
Brochures /posters / flyers	No

DVD /Film /Multimedia	Yes
Coverage in specialist press	Yes
Coverage in general (non-specialist) press	No
Coverage in national press	No
Coverage in international press	No
Website for the general public / internet	Yes
Event targeting general public (festival, conference, exhibition, science café)	No

23. In which languages are the information products for the general public produced?

Language of the coordinator	No
Other language(s)	No
English	Yes

Attachments	
Grant Agreement number:	230557
Project acronym:	Value Isobars
Project title:	The Landscape and Isobars of European Values in Relation to Science and New Technology
Funding Scheme:	CP
Project starting date:	01/06/2009
Project end date:	30/11/2011
Name of the scientific representative of the project's coordinator and organisation:	Prof. Matthias Kaiser UNIVERSITETET I BERGEN
Name	
Date	18/12/2012

This declaration was visaed electronically by Ellen Ingeborg HAETTA (ECAS user name nhaettel) on 18/12/2012