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Futur – The German Research Dialogue
Conceptions and Experiences of a New Foresight Process

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Abstract

Futur, the current German federal foresight dialogue, has recently generated its first results. Futur is innovative with respect to its objectives, its methodology and its results. Experts from a broad range of disciplinary and professional backgrounds and the wider public have been involved in the process. New methodological tools have been employed to generate, focus and implement ideas and subjects. Futur stimulates the exchange of future conceptions and research strategies between science, economy, policy makers and society at large. It provides input in the strategic research funding policies of the German Federal Ministry of Education and Research.

Contents

1. Introduction

Futur is a foresight process that was initiated by the German Federal Ministry of Education and Research (BMBF). It has started in spring 2001 and has been carried out in Germany on a national level. By August 2002, the first results had been developed. In four guiding visions, aspects of the future development of society and the demand on scientific research are laid out. Futur is about to be continued, taking up the results of the first process and drawing on the experiences that have been made so far.

Futur was carried out by a consortium of five institutes:

- IFOK – Institute for Organisational Communication GmbH, Bensheim/ Berlin (head of consortium: overall conception, process management, communication),
- Fraunhofer Institute for Systems and Innovation Research ISI, Karlsruhe (foresight expertise),
- Institute for Future Studies and Technology Assessment IZT, Berlin (future studies),
- Technology Center Information Technology VDI/VDE-IT, Berlin (scientific and technological expertise),
- Pixelpark AG, Cologne (internet services)

The authors of this paper are staff of IFOK and were central contributors to conceiving the structure and methodology of the process and to organising and conducting Futur.

2. Theses

The objectives, steps and results of Futur will be presented in this paper. We will argue for the following theses:

- Futur establishes a new "strategic tool" for the research policy of BMBF.
- Futur stimulates the organisational development of BMBF.
- Futur overcomes barriers: It fosters practical ways of interdisciplinary thinking.
- Futur combines the neutral and autonomous dialogue of experts with the result-oriented generation of guiding visions to be implemented in research policies.
- Futur sets new standards for public participation in German foresight processes and policies.

3. Futur – the process

3.1 The idea – objectives of Futur

As the leading institution for research funding on the national level, the German Federal Ministry of Education and Research (BMBF) is permanently faced with the following general questions:

- Does BMBF support future-oriented research topics?

- Which research programmes can add to national and global problem-solving processes?
- Which research programmes need support to improve Germany's pursuit of innovation?
- Which strategic processes would support transparent and comprehensible priority-setting?[1]

Foresight is to play an important role in answering these questions. It is the aim of foresight processes in general to yield information about likely or possible future developments in science, technology and society, in order to identify the most promising fields of scientific research and technology development.[2] Foresight results can therefore contribute to the basis for decision making in research and technology policies, especially research funding and agenda setting.

This prompted the BMBF to start the foresight process Futur. On the basis of earlier experiences with foresight,[3] BMBF set a number of particular objectives for Futur. These objectives determine the characteristics of Futur as a foresight process and distinguish it from other foresight processes both in Germany and internationally:

1. It was a central condition that the research will meet outstanding **public demand**.[4]
2. BMBF decided that the identified research subjects should be **interdisciplinary**.[5]
3. The foresight process was intended to be **participative**. Experts from many different disciplinary, professional and institutional backgrounds, representatives of civil society and interested citizens were to be involved in the process. The aim was to open up sources for input independent from previous foresight and agenda setting processes.[6] In addition, the process and the results should be transparent and communicable to the general public.[7]
4. The aim of the process was to develop a number of "guiding visions" that can and will be directly **implemented in research funding** programmes by BMBF and the funding agencies.

[1] See V. Dietz (2002), „Futur - der deutsche Forschungsdialog", in: *Development and Perspectives* 2002 (1), 3-24, p. 7.
[2] Compare B. R. Martin (1995), "Foresight in Science and Technology", in: *Technology Analysis & Strategic Management 7*, 139-168; see also K. Cuhls (2000), "Wie kann ein *Foresight*-Prozess in Deutschland organisiert werden?", Gutachten für die Friedrich-Ebert-Stiftung, 13.
[3] See below for previous German and international foresight processes.
[4] BMBF (2000), „Ausschreibung für einen Dienstleistungsauftrag FUTUR", http://www.bmbf.de/677_1951.html.
[5] BMBF (2000).
[6] H. Banthien/ C. Ewen/ M. Jaspers/ J. Mayer- Ries (2002), „Welche Zukunft für Foresight und Forschungspolitik? Futur als methodische, inhaltliche und institutionelle Innovation", in: *Development and Perspectives* 2002 (1), 27.
[7] BMBF (2000); cp. Futur (2002), „Interview mit Volkmar Dietz (BMBF) und Hans-Peter Meister (IFOK)", http://www.futur.de/de/384_1284.htm.

3.2 The design – elements of Futur

These objectives triggered a number of design features of the process. First, there had to be a **broad spectrum of participants**:

- To ensure the necessary scientific and technological expertise: scientists and experts on technology.
- To secure the demand orientation and the participatory character of the process: experts and representatives from economy and societal groups and associations (trade unions, churches, non-governmental organisations, media, arts, think tanks, foundations).

Altogether, about 1500 individuals took part in the process. They were divided into an inner and an outer circle. Members of the inner circle participated in the direct meetings, workshops and conferences, while the members of the outer circle were only involved in online events. In order to secure the implementation of the results, representatives from BMBF and the project managing agencies[8] were involved in the process, particularly at stages where important selection decisions were taken. Also the Innovation Council[9] of the German Federal Government was involved by giving statements at various stages.

Second, the process was to be conducted **openly**. The input of ideas, scenarios, values and expertise was very broad, based mainly on the participants' ideas.[10] This input was discussed and integrated autonomously. The participants discussed and decided upon how to focus the subjects, while the consortium summarised and structured the results.

Third, since the results were designed to be put into practice, the process also had to be both **targeted** and **efficient**. In the relatively short span of time available, guiding visions had to be developed that were both innovative and precise enough to be translated into funding programmes. The topics of the guiding visions or the way of approaching them had to be new with respect to existing funding programmes of BMBF; they had to take account of the state of the art in science and technology, and they had to be formulated both comprehensively and detailed enough to guide funding programmes.

Fourth, this combination of openness and result orientation, together with the heterogeneous composition of the set of participants, made special demands on the chosen methodology. The process had to take on the form of a **dialogue** (in contrast, e.g., to a survey) in order to involve the different agents in a constructive process in which the various expertise and interests could best be brought in and

[8] Project managing agencies are public research institutions with which BMBF closely cooperates in the organization of research funding programmes.
[9] The Innovation Council is an advisory council of high-ranking personalities from science, business, and society.
[10] The participants were offered additional information on other foresight activities and analyses of trends discussed in future studies journals.

merged. A number of **different methods** had to be used at the different stages of the process, including an open space conference, an online workshop, internet voting and focus groups.

Fifth, in order to facilitate the exchange of information between the participants and to stimulate the involvement of the broader public, an effective **internet presence** had to be created.[11] The web pages accessible to the general public contained general information covering the process and its results, and the opportunities for discussion and for application for the outer circle were offered. A workspace accessible only to the participants offered more detailed information about the process and its preliminary results (including minutes of sessions).

3.3 Other national and international foresight processes

Futur fundamentally differs from previous German foresight processes. In the short history of systematic, state-run foresight in Germany, three stages can be distinguished.[12] The first study published in 1993 concentrated on identifying technological and technology driven developments.[13] The technology push was thus taken as basis for political and economic decisions. In the second period, from 1993 to 1998, a series of Delphi surveys was conducted in which expert opinion was collected. These Delphi surveys not only identified scientific and technological, but also economic and societal developments and need arising from them.[14]

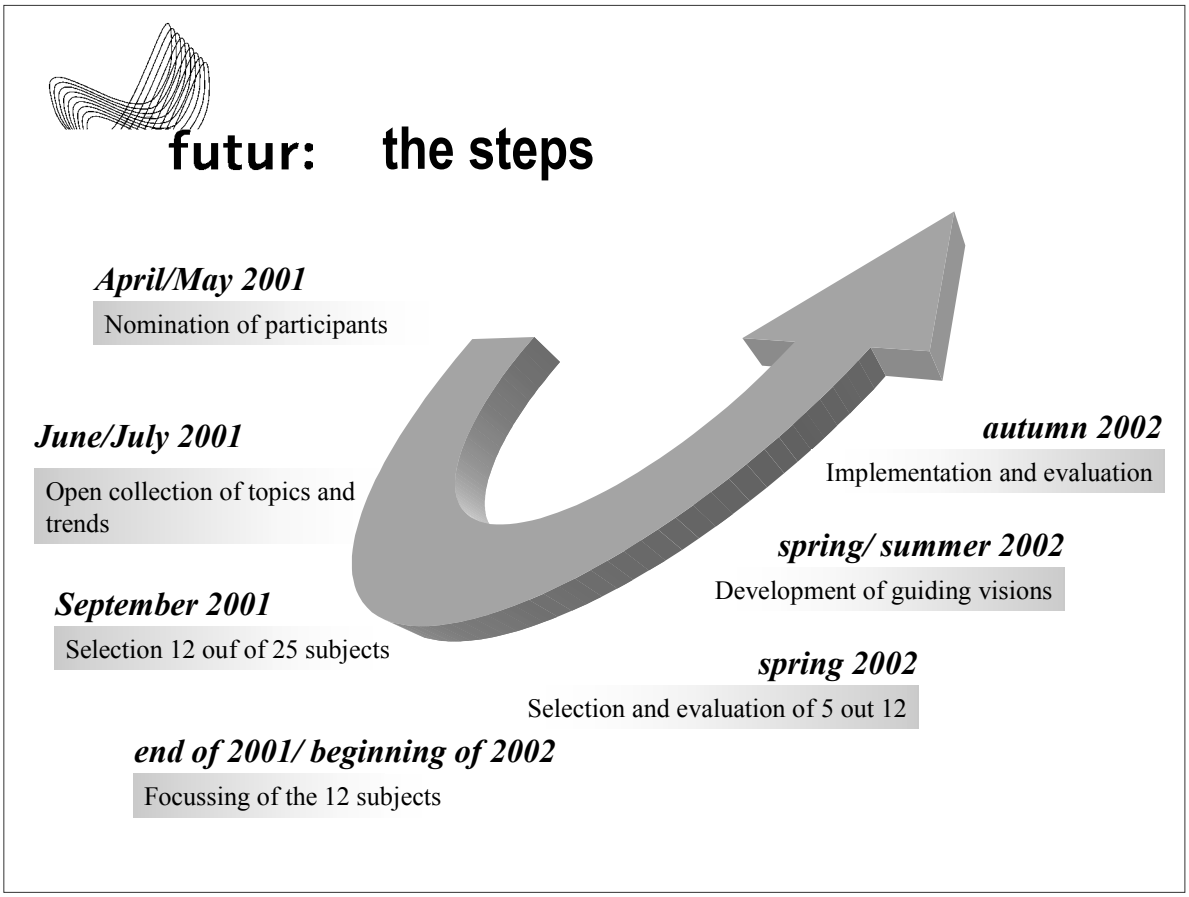
The third stage, starting with Futur, differs from the earlier stages by involving a much broader spectrum of experts and representatives from many different areas of science, economy and society. In addition, the basic methodology has changed from a survey to a dialogue. Direct meetings of the participants were the chief tool for developing ideas and visions. A central new feature was also the aim to implement the results in funding policies. And to a larger extent than in the Delphi studies, societal developments and needs were taken as the basis for scientific and technological research.

Many of these characteristics have previously been employed in foresight processes in other countries. A broad spectrum of participants has, e.g., been included in foresight processes in the United Kingdom, Sweden, and Austria. Developments and needs, arising e.g. in aging societies, were central for a

[11] See http://www.futur.de.
[12] For the following see A. Zweck/ M. Braun (2002), „Foresight - Ein Blick in die Zukunft zwischen Anspruch und Partizipation", in: Development and Perspectives 2002 (1), 47- 66. Cp. also Dietz (2002), 5.
[13] H. Grupp (1993), *Technologie am Beginn des 21. Jahrhunderts* (Heidelberg: Physica).
[14] Bundesministerium für Bildung, Wissenschaft, Forschung und Technologie (1993), *Deutscher Delphi-Bericht zur Entwicklung von Wissenschaft und Technik* (BMFT: Bonn); Bundesministerium für Bildung, Wissenschaft, Forschung und Technologie (1996), *Delphi-Bericht 1995 zur Entwicklung von Wissenschaft und Technik. Mini-Delphi* (BMFT: Bonn); K. Cuhls/ K. Blind/ H. Grupp (eds.) (1998), *Delphi '98. Studie zur globalen Entwicklung von Wissenschaft und Technik. Zusammenfassung der Ergebnisse* (FhG-ISI/ BMBF: Karlsruhe, Bonn).

number of national foresight processes.[15] However, the combination of features that characterize Futur is unprecedented, and no foresight process of this layout has yet been realised. We think therefore that the experiences made with Futur allow for new and valuable insight into a number of critical aspects of foresight processes. We will turn to these aspects below.

3.4 The steps



The main steps of Futur were:

1. Nomination of participants: 870 inner circle, 600 outer circle[16] (methods: nomination of an initiative circle by the consortium, co-nomination, self-application, targeted addition of expertise)
2. Open collection of topics and trends, organising them in 25 subjects (methods: workshops, open space conference)
3. Selection of 12 out of 25 subjects (methods: online voting, BMBF in-house workshop, statement of Innovation Council)

[15] Cp. A. Zweck/ M. Braun (2002), 51ff.
[16] Numbers as of summer 2002.

4. Focussing and development of the 12 subjects (methods: formation of focus groups, online workshop, future workshops, focus group sessions)
5. Selection of 5 out of 12 topics (methods: online voting, statements of BMBF, project managing agencies and Innovation Council)
6. Development of the chosen subjects into guiding visions (methods: focus group session, formation of guiding vision teams with members of the consortium, BMBF, the focus groups as well as additional experts)
7. Implementation of guiding visions (formation of cross-departmental implementation teams at BMBF, development of research programmes)
8. Evaluation of Futur (by an external, international panel of experts)

3.5 The results

In July 2002, four guiding visions were developed. Their titles are:

- "Creating Open Access to Tomorrow's World of Learning"
- "Healthy and Vital throughout Life by Prevention"
- "Living in a Networked World: Individual and Secure"
- "Understanding Thought Processes"

Their implementation in research programmes is currently under way. A fifth subject, "Individual products for tomorrow's markets", is intended to be incorporated cross-sectionally in the programmes of all relevant departments of BMBF.[17]

Each of the guiding visions is elaborated in a profile that comprises the definition of a vision and of objectives for the respective field of development and research, the description of the importance of the field for society and economy and a scenario. In addition, the need for further research is identified.

Judged by their titles alone, the subjects of the guiding visions certainly do not come as a great surprise. The topics identified have been previously considered as central to the future development of science and society.[18] They also relate to existing funding programmes of BMBF. However, this concurrence can hardly be counted as a weakness of the process. It rather shows that Futur can bestow additional legitimacy to current funding programmes.

But beyond this congruence of the results of Futur and other foresight activities, the Futur results are specific and innovative in a number of respects. First, which topics have been given **priority status** is

[17] For the complete guiding visions see http://www.futur.de.
[18] Cp. the funding programme IT2006, www.it2006.de; K. Cuhls/ K. Blind/ H. Grupp (eds.) (1998).

remarkable. The chosen topics are motivated by foreseeable developments and needs in society and economy. Most of them are directly linked with intended applications and implementations in every day life. At the same time, topics prompted purely by the internal logic of scientific development are almost entirely lacking. This does not only apply to the five subjects selected in the second round; also the majority of the others of the 12 topics selected in the first round share these characteristics. Among them are subjects such as "promoting inter-cultural potentials", "desirable labour in the knowledge society", or "sustainable and globally responsible food production". These intermediate results will enter into the continuation of the process and do therefore add to the output of Futur. The priorities set by Futur therefore reflect a clear public demand pull as opposed to a science or technology push.

Second, the guiding visions are inherently **interdisciplinary**. The research topics and their implementation in each case require multiple disciplines, comprising natural sciences and engineering on the one hand, and social sciences or the humanities on the other hand. Even though interdisciplinarity was an objective from the very outset,[19] it is not something which is forced upon the topics, but comes with them very naturally. In the case of medical prevention, e.g., the medical sciences, the development of diagnostic instruments and of the appropriate information technology are all central to the vision. But at the same time, the acceptance and implementation of prevention measures have to be assured. For this reason, research on ethical issues, human motivation and incentives is planned, involving disciplines such as psychology, the social sciences, philosophy and law. In the whole, it is the demand-orientation of the guiding visions which requires the contribution and cooperation of a number of disciplines.

Third, the results stimulate many **new insights into other programmes and strategies** of BMBF. The vast number of ideas contained both in the guiding visions and the intermediate results give rich impulses for the future development of funding programmes. The guiding visions themselves set new standards for further strategic papers through their structure and the combination of visionary scenarios and specific advice for funding. The consistent demand-orientation of the guiding visions will serve as a touchstone for existing and future funding programmes. And the process as a whole has led to considerations about a more systematic organisation of comprehensive strategic lines of funding.

Futur thus demonstrates that a process of such complexity, involving a large number of participants from a variety of backgrounds and institutions, dealing with such a difficult subject as "The Future", can in fact be carried out in a dialogue, combining openness with effective result-orientation. All in all, the time span – one and a half years – was of relatively short duration. This time span was not only fixed by the Ministry, but also necessary in order to sustain the concentrated momentum of working towards results.

[19] See above.

It can therefore be concluded that, judged by its results, Futur has been successful. It has, within the projected time span and on a broad participatory basis, developed guiding visions for research funding that are both innovative and realisable. This supports the first of the theses stated at the beginning: **Futur establishes a new "strategic tool" for the research policy of BMBF.**

4. Implications of Futur

Beyond the role of Futur for BMBF's funding policies, Futur has many more implications. It would, of course, be interesting to present an elaborated evaluation of the whole process. However, the evaluation of Futur, carried out by an external panel of foresight experts, is only under way. Instead, we want to discuss some issues which have repeatedly occupied us during the process and which concern the other theses.

4.1 Institutional implications for BMBF

The institutional and political implications for the German Federal Ministry of Education and Research (BMBF) are an important aspect of Futur. As a process conducted by an independent consortium and with participants from outside the Ministry and the directly linked project managing agencies, Futur can give new impulses to the Ministry. It has impacts on three levels:

1. to give independent inputs on funding priorities and thus check existing programmes,
2. to be a means for organisational development and institutional reforms,
3. to provide additional legitimacy to the Ministry's funding policies and organisation.

For all of these impacts, the status of the process and its results are of central importance. On the one hand, this status depends on the independence and hence innovativeness and legitimacy of the process. On the other hand, it depends on the acceptance by the ministry, both at the level of political decision making and in the departments responsible for administrating the funding of specific fields of research.[20] A potential conflict lies here, where independence and acceptance have to be brought into concordance.[21] It was therefore an important step that the Innovation Council – an advisory council of high-ranking personalities from science, business, and society – welcomed the guiding visions and favoured their implementation.

[20] The departments ("Referate") of BMBF are organised mainly along disciplinary boundaries and technology fields.
[21] See below for a discussion of the selection procedures, in which this conflict had to be resolved.

In order to stimulate such impacts, a workshop on the results of Futur with participants from different departments of BMBF was arranged. Beyond making the results known among the BMBF officials, a major aim was to improve the exchange on future topics among the staff of different departments. Implementation teams are being formed for the implementation of the guiding visions. All departments that consider the respective guiding vision as relevant to their area of research funding will send staff to this team. The knowledge flow on interdisciplinary topics and across departmental boundaries that is thus established is new to the ministry. Thus our second thesis: **Futur stimulates the organisational development of BMBF.**

4.2 The role of interdisciplinarity in the process

The whole process was designed to be interdisciplinary and pluralistic. One would expect that this can lead to difficulties of understanding and consensus formation. These problems would be especially virulent where participants from widely differing disciplinary and professional backgrounds have to agree on a precise formulation and the specific contents of a subject, as was necessary in the focus groups.

In contrast to these expectations, our experience and a survey made among the participants indicate that the interdisciplinary and interprofessional constitution of the focus groups in some respects played a neutral, in others a positive role. Participants do in fact report on problems of agreeing on definitions, subjects and directions of discussions. But where these problems existed, they were regarded to arise less from differing backgrounds and more from a lack of motivation and expertise on behalf of the participants. We have also repeatedly experienced that experts with different backgrounds disagreed about the real competences for a given subject. However, such clashes of disciplinary interests were significantly attenuated when participants met several times. In general, where the composition of the interdisciplinary focus groups remained largely unchanged across the different meetings, a problem-oriented and trust based discussion was achieved. The different disciplinary and professional backgrounds of the participants, in addition, were generally considered stimulating for the discussions and participants report that it generated new insights for themselves.

The interdisciplinary constitution of the subjects and of the resulting guiding visions was enforced by the employed methodology. After the collected ideas had been bundled in more than 20 focus subjects, the participants of the subsequent open space conference could choose freely one of the focus groups to join. The groups thus formed were composed of members with very different disciplinary and professional backgrounds. They were given the task to define (or redefine) their subject and to develop its profile. Because of the composition of the groups, this led to rather broad subjects whose profiles entailed contributions by group participants with very different backgrounds. Although the subjects often had to be made more precise and their profile sharpened in the following steps, the

had to be made more precise and their profile sharpened in the following steps, the interdisciplinarity was preserved.

Next to this methodical cause, however, the interdisciplinarity of the lead visions also comes naturally with their demand-orientation. (See the discussion above.) This can be taken to indicate that, by the very nature of current and future societal problems and developments, co-operative research of a multitude of disciplines is called for.[22]

Demand-orientation therefore proves to be a central condition for overcoming existing barriers. With respect to BMBF departments, as well as with respect to academic disciplines and professional backgrounds, the orientation of the foresight process on foreseeable societal demand created both the motivation and the pull necessary to generate discussions and networks across institutional borders. This is our third thesis: **Futur overcomes barriers: It fosters practical ways of interdisciplinary thinking.**

4.3 Opposition between autonomy and target-orientation of the process

There is a basic opposition between two objectives of the process. On the one hand, the process is intended to be open to any input coming from the participants, and to integrate this input in an autonomous way. Both the consortium and the participants are external and neutral with respect to BMBF. On the other hand, the results of the process have to be specific and realistic visions for research policies and have to be implemented by BMBF. Various measures had to be taken to overcome this tension between autonomy and target-orientation. They centre around the selection procedures, i.e. the two steps of selecting a number of the initiated topics for further elaboration.

It was most important to fix the criteria for selection early in the process and to make sure that the participants were familiar with them. These criteria dictated that the topics should be

- focussed,
- interdisciplinary,
- oriented at public demand, and
- innovative.

These criteria and their communication established a contest among the groups that were working on the different topics. They knew that ‘their’ topic only had a chance to go to the next round if they managed, within the group, to agree, e.g., on a focussed formulation of the subject. In addition, the groups had the task of presenting their results as answers to questions which reflected the criteria.

[22] Cp. M. Gibbons et al. (1994), *The New Production of Knowledge: the Dynamics of Science and Research in Contemporary Society* (London: Sage).

They had to state how the proposed research is innovative, meets public demand, etc. This contest was, on the one hand, problematic, since it risked suppressing or eliminating innovative ideas which are not generally accepted within the group or which do not fit neatly into the whole subject. On the other hand, the contest played a central role in efficiently bringing the groups to work towards focussed results. Because of this ambiguity of the contest as such, the clear communication of the criteria and of the steps and the results of the selection process was important so as to achieve optimal transparency.

The selection itself was made on the basis of an online voting of the members of the inner and outer circles and surveys among the other institutional partners (BMBF, consortium).[23] All of them were asked to rate the topics according to the selection criteria. On the basis of these votes, the consortium fixed the list of those topics that were proposed for further elaboration.[24] The final word, however, was with the Minister, who approbated the choice in both stages of selection.

In this way, a selection process was accomplished that preserves as much as possible of the autonomy of the process and of the participants' input, while at the same time making sure that the results both can and will be implemented into research policy: **Futur combines the neutral and autonomous dialogue of experts with the result-oriented generation of guiding visions to be implemented in research policies.**

4.4 Futur as part of a new understanding of politics

It can widely be observed that participatory and dialogical processes have become more and more important in many fields of public administration and policy making.[25] A number of reasons have been identified for this tendency.[26] The contexts of political decision making have become more complex in many respects, especially concerning the dimensions to take into account (long-run effects, globalisation, high-level interdependence) and an increase in the differentiation of societies with heterogeneous interests and value pluralism. At the same time, more direct participation is demanded by citizens. Politics responds to these developments by involving citizens more directly, in particular in areas such as local or regional planning, environmental protection, or technology assessment.

[23] At the first selection step (12 out of 25), the VDI/VDE provided additional expertises on the technological plausibility of the visions. At the second selection step (5 out of 12), it was taken into account that the proposals had to be new with respect to existing funding programmes. At both stages, statements of the Innovation Council added to the other opinions.
[24] At the second selection step, in some cases only parts of the topic had been chosen and further need for elaboration was determined.
[25] As only one, but very prominent indicator for this trend, see the prominence of participation in the *White Paper on European Governance* of the European Commission (25/7/2001), http://europa.eu.int/comm/governance/white_paper/en.pdf.
[26] See P. Feindt (2001), *Regierung durch Diskussion?* (Frankfurt: Lang), chapt. 4 for a review of these reasons.

With Futur, this trend has been transferred onto foresight and research agenda setting in Germany. This area is, on the one hand, particularly inaccessible to public participation, since expertise is of central importance. This is why for the inner circle of Futur, the focus for nomination was not on 'ordinary' citizens, but rather on experts from different professional, societal and disciplinary backgrounds. On the other hand, conceptions of the future are of concern to everybody. Therefore, it was an important objective to develop visions and scenarios that are generally desirable and that meet societal demands. And the general public was involved by making the process transparent, by communicating the procedure and the intermediate and final results and by offering the opportunity to become involved in the outer circle and the future workshops that took place in the run-up to the focus group sessions.

It is important to note that Futur is by no means designed as the exclusive tool of BMBF for foresight and agenda setting. Next to Futur, there are two more chief sources of input for funding decisions. On the one hand, for specific disciplines, early detection of technology is undertaken by think tanks or BMBF departments.[27] On the other hand, interdisciplinary innovation and technology analysis is conducted by experts from different departments of BMBF or from project managing agencies.[28] Therefore, Futur does not completely change the decision making in German federal research policy. Instead, it complements existing strategic tools. This, however, brings a new character to research policy in Germany: **Futur sets new standards for public participation in German foresight processes and policies.**

5. Conclusion

Futur thus proves to be an effective tool for the exchange of knowledge and conceptions about the future of society and science. As a non-institutionalised, flexible process, it can improve the interactions both between and within the different institutions and players in the triple helix.

In Futur, the political and administrative institutions play a very different role from that of the societal players – from science, economy and society at large. Since Futur is designed to generate visions that are innovative with respect to existing funding programmes, the process preserves a high degree of political independence, and intervention and involvement of the ministry is kept at a minimum. At the same time, the results are to be implemented in research policies, which means that the ministry and its project managing agencies have to be receptive to the process and its results. The role of the Ministry is therefore characterised by a blend of non-intervention and ratification.

[27] See Dietz (2002), 6/7.
[28] See http://www.innovationsanalysen.de.

By its strict orientation on societal demand and the involvement of a broad societal spectrum, Futur sets new standards for public participation in research policies. Science and technology are a means of central importance for shaping the open future. However, since the future is of everybody's most basic concern, research policy should not only be grounded on expertise, but also legitimated by present and future demand. It therefore has to be based on an ongoing dialogue that is driven by expertise and is above all public and transparent.