The role of expertise in environmental governance: tensions between effectiveness and democratic accountability?

Paper to be presented at the 2008 Berlin Conference on the Human Dimensions of Global Environmental Change, 22-23 February 2008, Berlin, Germany

First draft – please do not cite without permission of the authors!

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Abstract

As policy issues become increasingly complex, political decisions strongly depend on insights derived from science. The demand for scientific expertise is especially strong in questions of environmental governance, not least because of the long-term character of many environmental problems. On the one hand, there are growing expectations for how science and politics can be linked in the most effective way. The interaction between the two social systems does not come without tensions, however. As policy making becomes ever more scientised and de-politicised, politics threaten to be technocratically "regulated away". Currently, the proper place of scientific expertise in democratic decision-making is still highly contested.

This paper first gives an overview of theoretical conceptualisations of the science-policy interface and, then, drawing on empirical insights from the EU-FP6 research project GoFOR[1], puts an empirical focus on the roles and functions of experts and expertise in environmental governance processes. Based on the empirical analysis of 16 case studies on evolving practices of governance in various land-use related fields (e.g., forestry, nature conservation, rural development) in ten European countries, we first strive to singularize the overall character of expert involvement in governance processes (e.g., by the relative weight of experts as compared to policy makers, by the institutional integration of expertise and politics, or the political functions that experts fulfil in policy processes). Based on that, our analysis tries to explore the social dynamics and challenges in the interaction between expertise and politics in environmental and land-use related questions in order to, finally, give a tentative answer on the question of what (new) role(s) science and expertise (could) play in governance processes.

1 Introduction

Science and expertise have long been a political factor in society. Recently, however, the interactions between science and politics seem to have developed new qualities and unprecedented levels of intensity. The strong interaction between science and politics evolves from and brings about various social dynamics and challenges which are currently discussed under some of the following headings:

Scientification of politics: As policy issues are becoming more and more complex, science has come to play an increasingly influential role in its contribution to the formulation of policy and regulatory decisions (Banthien *et al.*, 2003). The demand for scientific expertise is especially strong in questions of environmental and natural resource policy, not least because of the high complexity and long-term character of many environmental problems (Fischer, 2001). As a result of the growing pervasiveness of science-related issues there has been a corresponding increase in the use of expert scientific advice to inform decision-making at all levels of policy-making (Glynn *et al.*, 2003). A new buzzword in this context is *"evidence-based policy-making"* (Sanderson, 2002).

[1] GoFOR (New Modes of Governance for Sustainable Forestry in Europe) is a project funded by the European Commission under the Sixth Framework Programme for Research and Technological Development; duration: 12/2004 – 11/2007; Webpage: www.boku.ac.at/GoFOR/

Politicisation of science: The increased coupling of knowledge with politics concurrently drives the politicisation of science. Weingart notes that knowledge, as it enters the public arena, is inevitably judged and valued by society. Advisors are selected not only for their knowledge but also for the legitimation that they provide for policies as well as for policy makers and interest groups involved in policy processes. "*The assumption that science is always disinterested and transmits only objective knowledge is obviously a myth. Science has become one of the actors to support [policy makers'] specific interests.*" (Weingart, 2002: 704)

Legitimacy crisis of science: As the use of scientific advice to policy making has increased, so too has the concern over its utility and validity. We witness the paradox of expertise being a resource that is increasingly sought for policy making and for social choice, but one that is also increasingly contested (EUROPEAN COMMISSION, 2001). Science that has traditionally drawn strength from its socially detached position has become too frail to meet the pressures placed upon it by contemporary societies (Jasanoff, 2003). The public discussion and confrontation between experts and counter-experts over the interpretation of scientific knowledge and its consequences are signs of a lack of social and political trust in scientific knowledge.

Against the background of the phenomena described above, both scientific scholars and policy makers are asking the question of which role science and expertise should play in democratic decision-making processes. When political norms are replaced by seemingly inherent necessities, politics threaten to be technocratically "regulated away" (Schelsky, 1965, Habermas, 1968). With the erosion of the legitimating function of science in modern societies, reinforced by a general trend towards making public decisions more accountable and democratic, such technocratic forms of decision-making are commonly dismissed as insufficient. At the moment, however, the proper place of scientific expertise in democratic decision-making is still under – partly contentious – social negotiation.

In this paper, we want to go into the question of what role experts and expertise play in *environmental governance processes*. New modes of governance (as contrasted with traditional modes of "governmental" steering) call for non-hierarchical forms of guidance, such as persuasion and negotiation, in which public and private actors are engaged in policy formulation (Peters, 2000). It can be expected that in a governance context, science and expertise play distinct, (probably) new roles that go beyond the mere content-wise input of scientific knowledge in political decision-making processes.

The EU-FP6 research project "New Modes of Governance for Sustainable Forestry in Europe" (GoFOR) analyzed evolving practices of governance in various land-use related fields (e.g., forestry, nature conservation, rural development) in ten European countries. Besides procedural elements typically accounted for in the governance discourse (like participation, intersectoral coordination, multi-level coordination, and procedural adaptivity and iterativity), GoFOR put a special focus on the role of science and expertise in governance processes. The normative concept of "democratic and accountable expertise" was used to address the question of how the relationship between science and society is organized in governance processes and how it could be developed in both a more effective and a more democratically legitimate way.

2 Conceptual perspectives on the science-policy interface

There are a number of ways of how to theoretically conceptualise the interaction between science and politics. In the following, three exemplary conceptualizations, as also applied in the GoFOR project, will be introduced.

2.1 Knowledge transfer model: Speaking truth to power

One of the classical conceptualizations of science-policy interaction is the so-called knowledge transfer model. Under this model scientists are brought into policy processes to impart their unique knowledge and wisdom to policy-makers. Science and politics are linked in a way that could be best described with the phrase "*speaking truth to power*" (Price, 1981).

The transfer model is associated with a picture of spatial separation between a place of knowledge production, i.e., science, and knowledge use, i.e., politics. Thus, the main challenge is the way in which knowledge is "transported" from one place to another (Nowotny, 1994). Decision makers and stakeholders are expected to have questions or demands, and scientists are expected to answer these questions or to meet these demands by providing policy-relevant solutions. Under the transfer model, scientific advice is also conceptualised as the simple transmission of ready-made scientific results (Weingart 1999). First, there is knowledge closure on the side of science, meaning that scientific questions are completely resolved and a finished product is handed over to policy-makers; after that, policies are formulated (*"get-the-facts-then-act model,"* Pielke, 2004: 406).

In the light of recent scholarship, the naïve hopes of the cascade-like *"scientification of the non-scientific world"* (Beck and Bonß, 1984: 382) turned out to be untenable, both in a theoretical and an empirical perspective. Scientists can no longer – and probably never could – simply do the science and hope that someone else uses the information to make "good policies" (Cortner *et al.,* 1999). Although the value of the knowledge transfer model as a correct depiction of empirical reality was already questioned at an early stage (e.g., Habermas, 1968), this unilinear approach of science in policy-making to some extent still dominates perceptions among policy-makers and scientists alike (Weingart, 1999; Beck and Bonß, 1984).

2.2 Group politics models: Expertise as a power resource for political actors

While the knowledge transfer model takes a rather "apolitical" look at the role of science and expertise in social and political processes, another set of models, commonly termed "group politics models", put the focus on the more "political" aspects of the interaction between expertise and politics.

Within group politics approaches, which have their disciplinary roots in the field of political science, or to be more specific, in the rational actor paradigm, contending groups use scientific knowledge simply as an additional resource to increase their authority or legitimation. The traditional analysis of power accords only an advocacy role to knowledge; or, as Claudio Radaelli puts it, knowledge is nothing but a "hook" on which interests hang their case (Radaelli, 1995: 173).

Group politics models succinctly point to the fact that in political conflicts science is often used in a selective way. Competing parties choose advice that supports their own policy choices and overlook advice which does not. Boehmer-Christiansen

(1995), for example, outlines a number of different *functions* that scientific knowledge can fulfil in the policy process: scientific expertise can serve as a source of authority and hence legitimacy for official actors, as justification for unpopular policies, as instruments of persuasion in debates and negotiations (with the parties tending to select the advice that best fits their own interests), as a mechanism for delaying or avoiding action or substituting for action (since conducting more research gains time and passes the responsibility to somebody else) and as a scapegoat and cover-up for policy change (since science may be used to allow politicians to change their minds without losing face or having to admit error).

2.3 Knowledge utilization models: Knowledge "creeping" into policy

The discouraging findings of an insufficient translation of innovative ideas into practical action led more sociologically oriented scholars to renounce the notion of an *instrumental* use of scientific knowledge that the transfer model was expecting and that group politics models had dismissed as unattainable. *Knowledge utilisation models* are built on the assumption that the immediate and direct conversion of science into practice is the exception rather than the rule, particularly when the issues are complex, the consequences are uncertain, and a multitude of actors are engaged in the decision-making process (Oh, 1996).

Knowledge utilization scholars argue that the "utilization" of research findings typically does not come in the form of instrumental but rather in the form of *conceptual* use. Conceptual use is not so much about using research findings for particular purposes as it is about *"[...] gaining insights into social processes as a foundation for understanding."* (Weiss, 1980: 389f.) Carol H. Weiss (1980) coined the term *"knowledge creep"* to describe the way in which ideas gradually spread, enter into use, and sometimes become the conceptual framework of entire policy debates. Therefore, even though research findings are not directly employed in a specific policy, they on the whole can still exert a powerful influence over the terms used and the way issues are framed and understood (Hisschemöller and Hoppe, 2001).

3 Overall character of expert involvement in environmental governance processes

After having sketchily depicted three partly antithetic, partly complementary conceptual perspectives on the role of science and expertise in governance processes, this chapter will put an empirical focus on the roles and functions of experts and expertise in governance processes. The empirical basis for analysis comes from the EU-FP6 research project GoFOR which analyzed 16 case studies on evolving practices of governance in various land-use related fields (e.g., forestry, nature conservation, rural development) in ten European countries. Table 1 gives a brief characterization of the GoFOR case studies.

Case title	Brief characterization
Austrian Implementation Strategy for the Convention on Biological Diversity	national strategy process mainly driven by international obligations
Austrian Forest Dialogue	participatory and sector-integrated national strategy process
Implementation of the Habitats Directive in Denmark	national implementation of EU policy
National Park Pilot Projects in Denmark	participatory planning processes at regional level as non-binding input to policy formulation at national level
Territorial Forest Charters in France	participatory and sector-integrated strategic planning approach at the regional level
Relief Plan for Forests in France	*ad hoc* governmental assistance programme in the aftermath of devastating storms
Integrated Rural Development policies in Germany (with three embedded sub-cases): – LEADER+ – REGIONEN AKTIV – Joint Task "Improvement of Agricultural Structures and Coastal Protection" (GAK)	integration of new policy approach (regional governance) in three programs: – EU pilot programme for sustainable rural development – national pilot programme for sustainable rural development – mainstream funding instrument of agricultural policy
Restructuration of management agencies for protected areas in Greece	reorganization of administration and management of protected areas mainly driven by EU policies
National Forest Programme Hungary	participatory and sector-integrated national strategy process
Norwegian Living Forests Project	participatory and sector-integrated strategy process initiated and promoted by private actors
"Nature for People, People for Nature" program in the Netherland	formulation and implementation of strategic policy document
Nature policy in the Groene Woud area, NL	long-term policy development around nature conservation
Nature policy in the Utrechtse Heuvelrug area, NL	same as above
Anti-corruption policies in Romania	policy formulation and implementation driven by international obligations and pressures
Implementation of *Acquis Communautaire* in Nature Protection Policies in Romania	national implementation of EU policy
Forest Policy General Plan of Catalonia, Spain	participatory and sector-integrated regional strategy process

Table 1: Brief characterization of GoFOR case studies

As regards their "inherent time horizons", the processes analysed range from strategies of sustainable development or land-use planning processes which are – more or less by definition – expected to take a long-term perspective to the very *ad hoc* revamping of legal and institutional frameworks following political crises.

The following sub-chapters (3.1–3.5) will unearth the overall character of expert involvement in the GoFOR governance cases. In chapter 4, we will come back to the

social dynamics and challenges in the interaction between expertise and politics introduced in the beginning and look how they play out in land-use related questions.

3.1 Relative weight of experts and expertise

A first aspect used to describe the overall character of expert involvement is the relative weight that experts and expertise have in political processes. In principle, political processes can be located on a theoretical continuum between purely *expert-driven* processes on the one extreme and purely *politics-driven* processes on the other extreme. The GoFOR governance cases fall – as most real-world processes – somewhere in between those two extremes. Most GoFOR cases tend towards the politics rather than the expertise end of the spectrum. None of the cases can be characterized as a purely or even predominantly expert-centered process. But at the same time, experts of different backgrounds have been involved at different levels in almost all the processes.

Only few GoFOR cases were explicitly framed as "technical" processes or were otherwise dominated by scientific reasoning. From the set of case studies, especially the implementation of the EU Habitats Directive, which was investigated in three countries (Denmark, Greece, and Romania), falls into this category. In Greece, management and administration of the protected area network has been firmly in the hands of public administration with numerous scientific committees and individual experts giving input on science-laden questions (Kassioumis *et al.*, 2007). Similarly in Denmark and Romania, the implementation of the Directive has been characterised by extensive use of expertise in the policy process (Boon *et al.*, 2007; Bancu, 2007). The great degree of expert involvement in the implementation of the Habitats Directive seems to be mainly attributable to the highly "technical" character of this EU directive (Alphandery and Fortier, 2001).

The majority of GoFOR governance cases can be classified as "*political*" processes where expertise played a minor (but nevertheless clearly identifiable) role. In some cases, expert input was brought in solely in the form of commissioned studies dealing with rather specific, technical questions. Scientists and other experts were represented in a number of political bodies (in a wider sense) but the underlying political processes, in most cases, were still operating more or less in a *modus operandi* that can be characterized as political deliberation or negotiation.

3.2 Linking of expertise and politics in the course of policy processes

Having seen that in none of the GoFOR governance cases experts and expertise played an outstanding and dominant role but that, on the other hand, all 16 cases left some room for expert involvement, it is interesting to ask how expertise and politics have been *sequentially linked* in the course of political decision-making processes. In the science-policy literature, this linking is typically represented in a dichotomy between two ideal-type models: decisionism and technocracy.

In the "*decisionist*" model, which goes back to the sociologist Max Weber, politicians have the ultimate authority in defining policy whereas experts are confined to selecting the most appropriate means by which the politicians' goals could be attained, and for their efficient implementation ("*science on tap*") (Millstone, 2007).

In the set of GoFOR case studies a number of processes correspond to a large degree to the classical Weberian decisionist model with policy makers setting political

goals and implementation being left to public administrations and their advisory bodies. The implementation of the EU Habitats Directive is almost by definition following a decisionist model logic. The designation of Natura 2000 sites has been clearly driven by politics, to be specific, by EU obligations to implement the Natura 2000 regime at national levels. As an implementation of this obligation, there have been expert bodies created at national levels to rigorously pursue the objectives.

The process around the French Territorial Forestry Charters (CFTs) is another example for a decisionist setup (Buttoud and Kouplevatskaya-Yunusova, 2007). Here, state actors were complemented by non-state actors to set the political guidelines for subsequent "technical" implementation. In the creation of this new policy instrument political aspects have been dominant with politicians and timber producers (and their representatives) driving the processes. In the implementation phase different types of expertise were mobilized, e.g. traditional forest specialists' expertise, local actors' insider knowledge, and scientific expertise.

In the science-policy literature the decisionist model is typically contrasted with the "*technocratic*" model in which scientific rationality is (or in a normative reading: should be) the guiding principle for political decisions. Responsibility for policy-making should be assigned to experts, since only they possess relevant knowledge and objectivity ("*science on top*") (Schelsky, 1965; Millstone, 2007).

At first sight, no example of a pure technocratic model can be found in the set of GoFOR case studies. This might be attributable to the fact that technocratic ideas and ideals are hardly ever called for or even explicitly spelled out in the political discourse. Millstone, however, notes that "*[n]owadays, explicit and enthusiastic endorsements are rarely articulated by policy-makers or by policy analysts, but whenever policies are represented as if based on, and only on, 'sound science' then technocratic assumptions are implicitly being relied upon.*" (Millstone, 2007: 488)

But also measured against this more differentiated perspective, GoFOR cases provide little evidence for technocracy. In some cases, like for example the implementation of Natura 2000, we see a rather strong influence of experts, but the setup is still far from genuine technocracy since experts rarely have other resources than their knowledge to convince policy makers (Boon *et al.*, 2007) and since the problem framings of scientists are – often fiercely and successfully – contested by alternative problem framings of societal stakeholders.

3.3 Institutional integration of expertise and politics

A third aspect relevant to describe the overall character of expert involvement in governance cases is the institutional integration of expertise and politics. Basically, expert advice processes can be located on a theoretical continuum between experts being fully part of political bodies, on the one hand side, and expert bodies and political bodies being strictly separated, on the other hand side. The first model, which could be called the "*integration model*," builds on multipartite bodies (made up of scientists and policy-makers) that are capable, simultaneously, of negotiating differences regarding scientific and political questions. The second model, which could be named the "*separation model*," makes great effort to divide "technical" issues from "political" ones. Here typically, "expert working groups" focus on the former while "policy groups" deal with the latter (Farrell *et al.*, 2001, Pregernig, 2004). In real-world processes often a mixture of the two models can be found.

In the set of GoFOR governance cases the integration of science and expertise into policy processes resembles more the integration model than the separation model. In most processes one finds “mixed” bodies in which policy makers, administrative officers, interest group representatives, and scientists have been sitting side by side without a clear separation of roles. Examples of such integrated bodies are the Austrian National Biodiversity Commission, the National Scientific Natura 2000 Committee and regional Park Boards in Greece, and the Editor Board in charge of the Catalonian General Plan of Forest Policy. In those bodies, scientists and other experts cooperated “at arm’s length” with political actors. The role of scientists has not been exclusively restricted to providing expert inputs while also policy makers (in the widest sense) have contributed to the knowledge base on which negotiation processes could build upon. In only a few GoFOR cases experts were kept in a more peripheral position.

3.4 Political functions of experts and expertise

Science and expertise can fulfill various *functions* in governance processes. In the set of GoFOR governance case studies, a number of different functions could be found. The following is an empirically derived typology of functions; the examples given are not meant to provide a full picture but rather serve more an illustrative purpose.

1. In some governance processes, experts have served as *(co-)producers of dominant discourses* or “schools of thought”. By introducing innovative concepts or general approaches, experts could lay the foundations for or push ahead a governance process. For example, in German rural development policies, experts played a key role in developing and propagating the overall discourse on “Integrated Rural Development” as a “policy idea” (Giessen and Böcher, 2007).
2. Experts have occasionally acted as *initiators* and *driving forces* in the early phases of governance processes. Experts as “policy entrepreneurs” helped to generate, design, and implement innovative ideas in the public domain. In Austria and Hungary, for example, university scientists assisted in bringing the idea of developing a “National Forest Program” (NFP) on the political agenda.
3. In many GoFOR cases, experts have performed special organizational or procedural tasks, esp. acting as *consultants on process-related questions*. In the Hungarian and the Catalonian Forest Program processes scientific experts were involved in the overall design of the processes and acted as general coordinators and organizers. In the Austrian NFP, scientists were involved in formulating the “code of conduct” for the dialogue process and, later, also served as co-moderators in working group sessions.
4. One aspect that seems to be somewhat conspicuous for new governance processes is the heightened importance of *process reviews* in and *evaluations* and the key role that experts play therein. In a number of GoFOR case studies, scientific experts were involved in carrying out evaluations of the setup and/or outcomes of the respective processes. A possible reason for that could be that policy makers strive to legitimate their policies by including external, “neutral” authorities, and science seems to be perfectly apt to symbolize this neutrality. Rather than supporting efficient and rational decision making, evaluations (also) serves as an important symbol of acceptability, indicating transparency and

administrative willingness to learn and, thus, being central to the legitimation of state actors (Power, 2000).

5. Especially in the context of political dialogue processes and strategy formulation processes, experts have frequently functioned as *builders of political consensus*. By acting as mediators or interest brokers, experts' knowledge could contribute to overcome conflicts of interest between different political actor groups and thus lay the ground for subsequent participation and negotiation processes. It seems, for example, that the main purpose of the mobilization of expertise in the Norwegian Living Forests process was to create a common and legitimate point of departure for consensus preceding the actual negotiations of the policy document (Ouff *et al.*, 2007)
6. In a number of case studies, experts have played a role as *creators of political arguments and counter arguments*. In some instances, experts deliberately provided political actor groups with "suitable" arguments to make their point in political deliberations; in other instances, political actors used – some would say misused – scientific studies to argue their case with the authors of those studies not having any influence on that.
7. Last but not least, experts have, of course, also provided *content-wise input* into policy processes. Numerous examples for that could be found in the set of GoFOR governance cases. In almost all case studies, experts gave input in the form of written reports, in hearings, or by actively participating in expert bodies.

When looking at the illustrative examples in the list above one can see that there is not *the one* function that experts and expertise play in governance processes but different types of experts fulfil a variety of cognitive, strategic and symbolic functions; and the set of functions found within one governance process varies from situation to situation.

When trying to connect this empirical typology with the theoretical frameworks introduced in chapter 2, one sees links to all three strands of theory introduced. The first two functions (framing of dominant discourses and policy initiation) find their correspondence in knowledge utilization models which point to the fact that the use of scientific findings typically does not come in the form of direct, instrumental but rather in the form of indirect, conceptual use. The next four functions clearly reflect the rationale of group politics models in which expertise is seen mainly as a power resource for political actors who try to realize their interests by mobilizing "appropriate" expertise. Finally, the last function corresponds with the knowledge transfer model according to which expertise has a direct, cognitive impact on policy

3.5 Call for more democratic and accountable forms of expertise

By focussing on "functions" one sheds a rather instrumental light on the role of science in politics. In recent years, the science-policy interface has also been thematized before the background of more *normative* ideas. Both scientific scholars and policy makers have been calling for more "accountable" and "democratic" forms of expert advice. As already mentioned at the introduction, especially EU bodies have put great efforts into searching for new models of how to organise the relationship between science and society in a more democratic way (EUROPEAN COMMISSION, 2001, 2002, 2003).

In the set of GoFOR governance case studies, one has only rarely seen explicit calls for the “democratisation of expertise” but, interestingly, quite a number of actual “tacit” practices have gone in this direction. In the following, the democratisation of expertise will be operationalized by using different criteria: (i) the plurality of expert input, (ii) the balanced representation of different types of expertise, (iii) the degree of accessibility and understandability of expert knowledge, and (iv) the transparent and unbiased selection of experts.

One of the key tenets of new governance processes is that new, often non-state actors are involved in policy making. This tendency towards the opening of policy networks can also be seen in the involvement and role of experts and expertise. In the set of GoFOR case studies, expert input has been far from restricted to traditional scientific expertise. One rather sees a kind of “pluralisation of expert involvement” with expertise being provided by a diverse set of sources and actors: public and private research institutes, interest groups, private consultants, and “ordinary citizens” (local knowledge).

As regards the question of how balanced the representation of different types of expertise was, the set of GoFOR cases provides evidence for different patterns, both the relative domination of one type as well as the rather balanced use of different types of expertise. In some cases, expertise was mainly called for and brought in by one single discipline or sector (often it was forestry) while other disciplinary perspectives didn’t play too prominent a role. In other GoFOR case studies, expertise was brought into governance processes in a more balanced way. A few case studies document interesting trends in the role of different types of expertise. Typically, the use of expertise has broadened and new knowledge has entered the scene in the course of time. But there are also counter-examples, in which after a period of pluralisation traditional forms of expertise came to the fore again.

The degree to which expert input into political decision making processes is perceived as accountable and legitimate not only hinges on the balanced representation of different types of expertise, but also the question of how easily expert knowledge is accessible and understandable for a policy and lay audience is assumed to play an important role. In the set of GoFOR case studies, the degree of accessibility, openness and transparency of expert advice varied remarkably. In a few cases, expert knowledge has been easily accessible and understandable for a policy and lay audience, while in others expertise moved less close to its “audience”. Especially the excessive use of technical-scientific language reduced the political clout and legitimacy of some processes.

In a similar vein, GoFOR governance cases also show quite heterogeneous patterns as regards the degree of transparency and independence in the selection of experts. In some governance processes, experts have been selected in a transparent way, while in others selection procedures have been more opaque.

Finally, there is also quite a large degree of heterogeneity as regards temporal patterns discernable. In some GoFOR cases, traditional technocratic approaches were – if not fully strengthened so at least – reinforced over time. Here, the two French regional forest policy processes, Greek National Park management and, at least to some extent, the Austrian Biodiversity Strategy process serve as good examples. In others, one sees remarkable trends towards more democratic forms of expert involvement in policy processes. The spectrum of expertise mobilized has been broadened to include new disciplinary knowledges, such as environmental

expertise in forest policy in Norway, Austria, or Spain, or social science expertise in nature policy in the Netherlands. In some processes, like the German Integrated Rural Development processes or the Dutch “Nature for People, People for Nature” process, also great efforts have been put into making scientific insights more easily accessible to and understandable for a lay audience.

4 Dynamics and challenges of expertise in politics

The scholarly literature indicates that, in recent years, science has come to play an increasingly influential role in policy making, especially in the field of environmental policy. The intensified interaction between science and politics has not, however, come without tensions. As set out in the introduction, the science-policy literature points to various social dynamics and challenges in the interaction between expertise and politics, namely the scientification of politics and the concurrent politicisation of science, and an ensuing legitimacy crisis of science. Based on the general characterization of expert involvement in politics (in chapter 3), we will now try to find out to what extent and how those phenomena have played out in the GoFOR governance cases as well.

Scientification of politics

In the set of case studies, science and expertise have frequently played a prominent role. At the same time, the GoFOR cases provide no indication for the “scientification of politics” in a narrower sense, i.e. that scientific expertise is dominating or even replacing politics. As outlined above, none of the cases analysed can be characterized as an expert-centred process dominated by scientific reasoning, but most cases were predominantly influenced by “political” factors. So in general, the analysis of 16 governance cases does not provide too much evidence in support of the above-mentioned thesis of the “scientification of politics” and the related danger of “technocratization”.

A possible explanation for that could be that these phenomena cannot be generalized to all policy settings and that the science-policy literature hitherto has looked at another type of policy problems than the GoFOR project did. In the science-policy literature, the “scientification of politics” has typically been accounted for in a very special class of policy problems, namely problems characterized by a high degree of system uncertainties and high decision stakes (cf. the concept of “post-normal science” by Funtowicz and Ravetz, 1993). Most GoFOR cases do not fall into this category. They do, for example, not deal with the adoption and implementation of cutting-edge technologies (like biotechnology or stem-cell research) but rather with different forms of land use which are, of course, sometimes contested but the consequences of which are more or less predictable. In addition, a number of GoFOR cases has looked at a special class of political processes, namely “strategy processes”. With their long-term perspective this type of political processes is probably more detached from pressing political questions which call for immediate political action; strategy processes somehow take a more “distanced” view on policy problems. In this type of settings political and societal actors have seemingly less incentives to draw on science as a problem-solver and/or a source of political legitimacy.

Politicisation of science

The special character of the GoFOR case studies can probably also be seen in connection with the second, related phenomenon described in the science-policy literature, i.e. the politicisation of science. While in many high-tech and risk related policy fields the increased coupling of knowledge with politics has driven the politicisation of science, we see little evidence for that in the GoFOR governance cases, at least not in the sense that scientific knowledge claims have been deconstructed along the lines of conflict of the underlying political dispute. But that does not mean that in the governance processes analysed, experts and expertise have been "apolitical".

One indication for that is that in most GoFOR cases expertise and politics have been tightly interwoven. As described above, the integration of science and expertise into policy processes typically resembles more a kind of "integration model" than a "separation model". In many GoFOR cases, science-policy advice has built on multipartite bodies made up of experts and policy-makers that are capable, simultaneously, of negotiating differences regarding scientific and political questions. In those "mixed" bodies policy makers, administrative officers, interest group representatives, and scientists sit side by side without a clear separation of roles. In only a few cases experts were kept in a more separated position. What is also interesting to see here is that neither the integration of science and politics in mixed bodies nor the organizational separation of science and politics were explicitly thematized in public discourses in any of the GoFOR case studies; the chosen organizational setups were more or less tacitly taken for granted. This stands in stark contrast with experiences especially from the United States of America. US advisory systems are usually organized in line with the "separation model" and great efforts are made to not only institutionally but also rhetorically "shield" science from politics (Jasanoff, 1987b, Renn, 1995). In a European context, this rhetorical "boundary work" does not seem to be necessary (Pregernig, 2005).

There is a second indication for the fact that also in the GoFOR cases expert involvement definitely had a "political" character as well: As described above, experts and expertise fulfilled a number of different *functions*. In some instances, expertise-based knowledge could actually contribute to substantively improve policy making, sometimes by providing direct and specific pieces of advice to policy makers, sometimes by influencing the policy process in a more indirect way, e.g. by generating and propagating new policy ideas or "schools of thought". In other instances, expertise seems to have served mainly as a political power resource without playing any epistemic role: Contending groups used scientific knowledge primarily as a means to increase their authority or legitimation.

Legitimacy crisis of science

The science-policy literature has pointed to several paradoxes of science in politics, one being the seemingly antithetic situation of expertise being a resource that is increasingly sought for policy making and for social choice, but one that is also increasingly contested (Weingart, 1999, van Eeten, 1999). Science has seemingly plunged into a kind of legitimacy crisis. Once again, our analyses showed that this phenomenon didn't materialize too strongly in the set of GoFOR governance case studies. In none of the governance processes analysed, the utility and validity of scientific knowledge claim were absolutely called into question. There were some

instances of confrontation between experts and counter-experts over the interpretation of scientific knowledge and its consequences but we found no signs of a complete lack of social and political trust in scientific and other types of expert knowledge.

5 Final remarks

The empirical findings of the GoFOR project reported above show that there is not the one and completely new role of science in governance processes that replaces traditional roles of science in public policy. Rather the set of 16 case studies shows that there are various roles for science in governance processes that empirically reflect different conceptions of the science-policy interface ranging from expertise fulfilling a rather apolitical, "cognitive" function in political processes ("speaking truth to power"), to the interest-driven use of science and expertise ("knowledge as a hook on which interests hang their case"), to new knowledge gradually spreading, entering into use, and sometimes becoming the conceptual framework of entire policy debates ("knowledge creep").

Before the background of normative considerations, the genuine quality of expert involvement in a governance context points towards an increased democratisation of the science-policy interface. "Tacit" practices going in this direction can be operationalized in terms of four general criteria: a growing plurality of experts and expertise that are brought into governance processes; a more balanced representation of different types of expertise (not only limited to scientific experts); aspirations to make scientific inputs more accessible and understandable for the public; and, last but not least, the unbiased and transparent selection of experts. In our set of GoFOR governance processes, we could demonstrate that in many cases there has, in fact, been an increasing plurality of experts and expertise involved and that there have been some efforts taken to make expertise more accessible.

Interestingly, the tension between effectiveness and democratic accountability of science is still quite relevant: In the range of GoFOR cases, we could find both a comeback of technocratic forms of science-policy integration as well as remarkable practices of organising expert involvement in a more democratic and accountable way. This shows that there is not a unique new role of expertise in governance processes but a supplementing of traditional functions of expertise with new expertise-related governance practices.

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