

Renn, Ortwin; Berghöfer, Augustin; Wittmer, Heidi; Rauschmayer, Felix

Working Paper

WP3: participation in the multi-level governance of European water and biodiversity - a review of case studies

UFZ Discussion Paper, No. 1/2010

Provided in Cooperation with:

Helmholtz Centre for Environmental Research (UFZ)

Suggested Citation: Renn, Ortwin; Berghöfer, Augustin; Wittmer, Heidi; Rauschmayer, Felix (2010) : WP3: participation in the multi-level governance of European water and biodiversity - a review of case studies, UFZ Discussion Paper, No. 1/2010, Helmholtz-Zentrum für Umweltforschung (UFZ), Leipzig

This Version is available at:

<https://hdl.handle.net/10419/44726>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

UFZ-Discussion Papers

1/2010 – GoverNat 10, January 2010

WP3: Participation in the Multi-Level Governance of European Water and Biodiversity – A Review of Case Studies

Report

Ortwin Renn, Augustin Berghöfer, Heidi Wittmer, Felix Rauschmayer

“Multi-level Governance of Natural Resources: Tools and Processes for Water and Biodiversity Governance in Europe” (GoverNat)

Objectives

The **overall objective** of GoverNat is to develop new solutions for multi-level environmental governance and to facilitate their use by decision makers in an enlarged EU. The **central research objective** is to test the hypothesis that certain participatory processes and analytical decision tools are particularly useful for improving multi-level environmental governance. **Specific research objectives** therefore address the enhanced understanding of multi-level governance of natural resources, the development of methods of public and stakeholder participation to be used in such contexts, the effective utilisation of specific analytical decision tools in multi-level governance, and the reflective evaluation of such use. These four tasks are necessarily interdisciplinary. The **central training objective** is to give 9 doctoral and 3 post-doctoral fellows an interdisciplinary training 1) in research on environmental governance, particularly of biodiversity and water, in Europe, and 2) in designing legitimate and effective solutions for communication between policy makers, scientists and the public in science/policy interfaces.

Consortium

1. UFZ – Helmholtz-Centre for Environmental Research, Germany (F. Rauschmayer);
2. ECOMAN - Ecological Economics and Management, Lisbon, Portugal (P. Antunes);
3. NERI - Danish Environmental Research Institute, Copenhagen, Denmark (M. S. Andersen);
4. SRI - Sustainable Research Institute, Leeds, United Kingdom (J. Paavola);
5. ICTA – Institute for Environmental Science and Technology, Barcelona, Spain (S. van den Hove);
6. CSWM – Centre for the Sustainable Water Management, Lancaster, United Kingdom (W. Medd);
7. UStutt - Institute for Sociology, Stuttgart, Germany (O. Renn);
8. IF - Institute of Forecasting, Slovak Academy of Sciences, Bratislava, Slovak Republic (T. Kluvánková-Oravská);
9. IELM-SIU - St. Istvan University, Budapest, Hungary (G. Pataki);
10. IREAS - Institute for Structural Policy, Slovak Republic (V. Chobotova).

Characteristics

- EU Marie Curie Research Training Network with 9 doctoral and 3 post-doc fellows
- Duration: 4 years (10/06 – 9/10)
 - Doctoral fellows: 4/07-6/10
 - Post-docs: 7/07-1/10
- 10 partners and several praxis affiliates in 9 European countries
- Coordination: Helmholtz-Centre for Environmental Research – UFZ (Dr. Felix Rauschmayer)
- Total contribution of European Commission: 2.4 Mio €
- Links water and biodiversity, participation and decision tools in a governance perspective

Contact

Dr. Felix Rauschmayer
coord.governat@ufz.de

Helmholtz - Centre for Environmental Research – UFZ
OEKUS - Division of Social Science
Postfach 500136
04301 Leipzig
Germany

Tel.: ++ 49 - 341 - 235 1656
Fax: ++ 49 - 341 - 235 1836
<http://www.ufz.de/index.php?de=1660>

WP3 Report
Evaluating and improving decision-making processes
Participation in the Multi-Level Governance of European Water and
Biodiversity – A Review of Case Studies

Ortwin Renn¹, Augustin Berghöfer², Heidi Wittmer², Felix Rauschmayer²

January 2010

1 Universität Stuttgart
Institut für Sozialwissenschaften
Seidenstr. 36/III
70174 Stuttgart, Germany

2 UFZ - Helmholtz Centre for Environmental Research
Permoserstr. 15
04318 Leipzig
Germany

Corresponding author:

Ortwin Renn
Tel: +49 711 685 83970
Fax: +49 711 685 82487
ortwin.renn@soz.uni-stuttgart.de

Abstract

Participation is said to improve decisions on environmental conflicts. When investigating 16 case studies of participatory processes in European Water and Biodiversity Governance, which necessarily is multi-level, the picture becomes blurred: many different forms of participation can be observed, only few of them are well-defined and well organised; most of them are dominated by ad-hoc decisions on whom to include, how to close debates, and how to deal with uncertainty, complexity, and ambiguity. While nearly all of these processes could be improved by a more conscious and careful setting, the application blueprints will necessarily remain out of scope. Natural, cultural and institutional contingencies make each case special and often unique and the multi-level characteristic of European governance of natural resources adds an additional layer of complexity on how to organise participation. The empirical account of whether deliberation can deliver what it promises in theory is still incomplete.

Preface

The 'Description of Work' of the GoverNat project assigns work package 3 the task of "Evaluating and improving decision-making processes". Its final output should have been a deliverable on "Possibilities for using analytical tools & participatory processes in multi-level governance of natural resources", based on the evaluation grid described in Rauschmayer et al. (2007), the first of the GoverNat discussion papers. This grid has been reshaped during the project work (see Antunes et al. 2010, in preparation). Due to this reshaping and to our findings of a rare use (or rather non-findings of a use) of specific tools in participatory processes in multi-level governance of European water and biodiversity, WP 3 thus altered somewhat in its emphasis. Focus was laid on examining aspects of 'Inclusion' (who, what, scope and scale of participatory process) and of 'Closure' (how to reach agreements in processes with competing truth claims and conflicting interests and values). These questions provided a common frame for analysis and allowed for some systematic comparison within the limits posed by the complexity, uncertainty and ambiguity of the different tasks tackled in the cases.

Introduction

Inviting stakeholders, experts and the public to take part in decision-making about water basin management or biodiversity has been a major objective in many countries of the world. The European Water Framework Directive and the implementation of the Habitats Directive manifest this objective for Europe (Rauschmayer et al. 2009a, b). The Directives resulted in the rapid mainstreaming of concerns for a systematic stakeholder involvement in environmental policies across all European countries.

The popularity associated with public participation, however, obscures the challenge of how to put this noble goal into practice and how to ensure that the substantive environmental goals as well as the procedural democratic objectives are met. How can environmental agencies include the best available knowledge in the field, incorporate public preferences, integrate

public input into the management process, and assign the appropriate roles to technical experts, stakeholders and members of the public? And who represents the public: the elected politicians, administrators, stakeholders, or all individuals who will be affected by the decision?

The process of stakeholder involvement is shaped by legal and institutional structures that provide opportunities and constraints for different participatory actions. Most national constitutions limit joint decision making of legal policy makers with civil society groups or representatives of the public because of the problem of accountability. Instead, stakeholders are being involved either as knowledge providers or as value consultants (Renn 2008: 294f.). Decision making processes in the area of environmental politics are often embedded in sophisticated governance structures with several horizontal and vertical levels (Benz and Eberlein 1999; Tait and Lyall 2004). The European environmental directives, and their implementing efforts, display this sophistication: they address several governance levels to affect concrete changes in the water and biodiversity management on the ground. For example, Article 14 of the Water Framework Directive requires national governments to delegate regulatory capacity upwards to the EU level, and downwards to the regional/local level. This shift leads to scale-dependent, multi-level forms of water governance (Swyngedouw et al. 2002).

Figure 1 provides a portrayal of the options for involvement across horizontal and vertical levels of governance (Renn 2008: 9).

Figure 1: Levels of vertical and horizontal governance

		Horizontal levels			
		Governments / Agencies	Industries	Science and Academia	Civil Society / NGOs
Vertical Levels	Local				
	Regional				
	National				
	Supra-national				
	Global				

The vertical governance axis defines the political arena which ranges from the local to the global level. Any federalist government structure is designed along similar vertical governance lines, with policies being advanced at supra-national (e.g. EU-) and global (e.g. CBD) levels as well. On each policy level different actors from the horizontal axis join or seek to influence the governance processes and contribute knowledge and/or values to the process and to the debates sustaining it.

The call for participation, as in the case of the two EU Directives, suggests that governments should adopt systematic ways across this matrix of inviting (and/or channelling) public involvement. In order to accommodate diverse institutional set-ups, political cultures and

positions prevalent in EU member states, the Directives have not specified ‘participation’ in detail. Guidance documents provide procedural advice but likewise leave much room for multiple interpretations (EC 2001, EC 2003). When it comes to implementing participatory processes, this has shown mixed results, e.g. in the case of pilot river basin projects (PRB 2007, EC 2007, Rauschmayer et al. 2009c).

There is a clear need for studying practical experience with participation in EU environmental policy implementation. This paper provides an overview of 16 case studies of stakeholder involvement in eight different European countries. The analysis has been performed under the EU Marie-Curie Project “GoverNat”. This project is aimed at characterizing the potential merits and drawbacks of stakeholder involvement in multi-level governance structures in European river-basin and biodiversity management. The case studies have been selected to highlight the broad array of different settings and challenges which are within the focus of the EU directives and their policies on participation.

The paper starts with (i) a summary of the cases in order to set the rather confusing scene. Then follows (ii) a framework for analysing and structuring participatory multi-level governance, focussing on questions of inclusion and closure: Who is being involved and how are decisions reached? and on the questions of how to deal with uncertainty, complexity and ambiguity. Informed by the cases, the framework informs (iii) our subsequent discussion of several key issues with regard to participation in the context of European water and biodiversity policy.

Summary of the Case Studies

All cases are briefly described in Table 2¹. One can see that 10 cases deal with biodiversity and 5 cases with water or river basin management. One case is about lagoon management in Venice. 12 cases out of the 16 have implications for multi-level governance; the remaining 4 cases are all confined to the local level. All 16 cases have some inclusion of non-governmental actors but the degree of horizontal governance varies considerably between the cases. Most cases have been completed by the time that this paper was written, 7 are still ongoing. The following sections provide brief descriptions of each case showing the disparity of European multi-level governance of biodiversity and water.

Table 2: *The case studies*

Author	Title of Case	Period	Country	WFD or Biodiv	MLG focus
Minna Santaoya	Amateur naturalists	2001-now	UK	Biodiv	national to local
Minna Santaoya	Implementing N2000 in Finland	1995-2002	Finland	Biodiv	EU to local
Minna Santaoya	Lake restauration, Lempälä	2001-2008	Finland	Biodiv	local
Sonja Trifunovova	Tatras NP	2004- now	Slovak Rp.	Biodiv	local to national
Sonja Trifunovova	Unsuccessful PAN	1999-200?	Slovak Rp.	Biodiv	local to national
Raphael	Visioning exercises for river Ribble	2004	England	WFD	Local/EU

¹ The 16 case studies were provided by the fellows of the GoverNat project (www.governat.eu). Please contact the fellows for more details on the cases.

GoverNat

Treffny						
Raphael Treffny	Local level participation for RBM	2008	England	WFD	Local	
Raphael Treffny	Regional level liaison panel process	2007-2009	England	WFD	Regional	
Oliver Fritsch	Hase river scenarios	2003-2007	Germany	WFD	mostly regional	
Oliver Fritsch	Leine-Unstrut Forum	2003-2004	Germany	WFD	local to regional	
Mireia Pecurul	Lleida N2000 selection and agro- env pilot	1995-200?	Spain	Biodiv	EU to local	
Catrin Jolibert	Monfurado N2000 mgmt plan	2003-2008	Portugal	Biodiv	Local/EU	
Matteo Roggero	Venice lagoon	2001-2008	Italy	-	local to national	
Matteo Roggero	Krebsbach dam	1995- now	Germany	WFD	Local/state	
Cordula Mertens	NP Bayer. Wald	1990's-now	Germany	Biodiv	local to Statel	
Cordula Mertens	NP Kirkunsag	1990's-now	Hungary	Biodiv	EU to local	

Amateur naturalists for biodiversity monitoring, UK

Several projects have been organised in the UK for mobilising amateur naturalists to assist in providing biodiversity data and to conduct monitoring. The UK Biodiversity Action Planning was inspired directly by the international Convention on Biological Diversity, EU policies (Gothenburg Declaration (2001) and renewed Sustainable Development Strategy (2006)) were integrated later.

The process for the monitoring campaign was top-down. At national level, the Natural History Museum (NHM) and the conservation agency English Nature (EN) took the lead. NHM and EN decided upon the frame in which the amateur naturalists were to participate and in which form the data on biodiversity was to be selected, processed and presented. The amateur naturalists could decide for themselves whether to participate in the given frame or not.

Stakeholders involved in the initiative shared the same biodiversity conservation interest, but they were in different positions to express this interest. Since the knowledge structure was hierarchically determined, the amateur naturalists expressed some disappointment with the ways their efforts were (not) recognized and the lack of commitment to use their data.

Selecting Natura 2000 sites in Finland

Natura 2000 sites constitute the main backbone of the European Habitats Directive and the site selection is the first step in establishing the Natura 2000 network. As 97% of the Finnish territory to be nominated was already under legal protection, the selection issue was not considered of great importance: Very late a working group was formed and insufficient money was provided for conducting participatory site selection processes in the country. Pre-existing EU scepticism in the countryside further fuelled the anger about the inadequate selection process and poor communication about it. There has been a general feeling that distant EU regulations affect the much cherished autonomy over land use issues. Media war and hunger strike were some of the responses. Time pressure from EU side and government misperception of the conflict potential of the issue aggravated the situation.

Lake restoration in Lempälä, Finland

A local reconditioning project of a lake for improving bird habitat was initiated by active birders in 2001. It then included as actors: the regional environment centre, the municipal environment administration, birders, local nature protection associations, fishermen's associations, land owners and local inhabitants. The style of deliberation was characterized by rather informal communications between the key parties. People have been familiar with participatory processes for land use management and have legally the right to participate when necessary; here the participation happened mainly within pre-existing networks. The project was mainly funded through EU Leader+ programme. Development funds were also used for achieving conservation. There was no real conflict to use mainly LEADER money to rehabilitate lake and enhance tourism potential.

Tatras National Park, Slovakia

Tatras National Park suffered in 2004 from a heavy windstorm, devastating 12000-14000 ha of forest. This triggered a debate about the future of that national park. Opinions differed: Foresters supported the plan of exploitation and man-made restoration, while conservationists appealed for the self restoration of the forest. It was decided to leave the area to natural restoration processes. In 2007 state foresters allowed for deadwood harvesting on grounds of an imminent threat of bark beetle population explosion. This stirred heavy protest from conservationists. As an antipode to the Governmental Committee for Renewal and Development of High Tatras, a Non-governmental Committee "Our Tatras" was set up. It was a reaction to the widely felt insufficient process of participation. Apart from the conflict over whose expertise counts, authority claims between local/regional and national policy levels aggravate the conflict. The case is on trial at EU level for jeopardizing a Natura 2000 site.

PAN Park Slovenský Raj, Slovakia

PAN Parks was established by WWF in partnership with a Dutch leisure company. It cooperates with management bodies of protected areas and sustainable tourism business all around Europe. Slovenský Raj National Park (SRNAP) was among the first candidates applying for PAN Parks. Ten years later, PAN Park certification has still not been carried out. Pan certification requires a 10.000ha core zone: To create such a core zone a number of contracts between private owners and State Nature Protection have to be made, with appropriate rules for utilizing the land. Non-state forest owners were afraid of inadequate compensation. In SRNAP, 47% of land is in private or community hands.

A second problem is connected with the role of SRNAP within the government agency for state forests. Although after EU accession the responsibilities were officially transferred to local levels, real power transfer has been avoided, so the decisions still mostly depend on higher levels. Regional government and park administration suffer from lack of resources and capacity.

Visioning exercises for river Ribble, England

In the context of the EU common implementation strategy of the WFD, England's EA undertook a pilot project in 2004 with the aim of developing effective approaches and methods for public / stakeholder participation in river basin management planning and a prototype River Basin Management Plan (RBMP) to be produced by 2007.

The process employed in the Ribble Pilot was a visioning exercise to identify desirable and feasible future conditions without being too restricted to current problems, constraints and conditions. It was intended and conducted as a participatory process for obtaining information from various stakeholder groups. The European Union had no direct influence on how the project was carried out, but WFD requirements should be met.

Approximately 50 individuals from key local and regional stakeholder groups with divergent interests were asked to formulate and hierarchically sort preferences for the river basins. Stakeholders could not agree upon a common vision after the workshops. This was produced by an independent body which drew from the workshops but the stakeholders were not represented in this body.

EA was responsible for choosing individuals to represent different stakeholders in the visioning exercise. It is unclear what selection criteria were applied by the EA. The WWF secured funding for the process which put the organization in a powerful position. Prompted by WFD implementation challenge, the participatory visioning exercise was strongly shaped/limited by WWF/EA's procedural design.

Pilot workshops on River Basin Management, England

Catchment management workshops did comprise one part of the participatory strategy of the Environment Agency and did address local issues for the management plan development. No decision making power was handed over to the participants, who were considered as information providers. The communal liaison panel members, who are obliged to inform the EA on a more regional level, will use these outcomes to propose more locally informed advice. The governmental agency does view these local events as a way to inform the management planning process on the one side and bring organisations and agencies closer to the importance of WFD implementation on the other side making them aware of that they do play a considerable role in the implementation of this directive. Decision making authority about what issues will be in the management plans does lie with the governmental agency. Even though a diversity of interests had been involved in the process, these interests did not clash. This participatory event was not a forum for actual decisions.

Regional Communal liaison panel for River Basin Management, England

EA as national actor institutes a regional liaison panel and organises consultations. Many panel members are those already collaborating with EA in other issues. Output is advisory only – uptake within discretion of EA, but apparently is being considered. For EA the panel is a cost-effective way of generating info.

Participation requirements are used to improve information exchange with mainly institutional actors at lower levels in an uncontested setting.

Hase river scenarios, Germany

For the Hase catchment, possible groundwater protection measures concerning the implementation of the WFD were investigated in their social, economic and ecological context. To this end, participatory processes were conducted that not only simply generated models and scenarios. The region's future and the consequences of stakeholders' decisions were openly discussed in an actors' platform and in focus groups. The participatory processes

aimed firstly at developing a shared understanding of the region's problems and challenges and secondly at developing desirable and probable scenarios, which were tested. Important methods were land use simulations, which were realised in agent-based models.

Participants took part in the process because they did not want something decided upon them without them having a say or even influencing the decision. A majority of participants were not interested in furthering the goal of the process, i.e. improving water quality at the expense of agricultural growth. To some extent there was also curiosity involved as to how these processes work and how much scope they give to further individual or associational interest.

The process did not end with an agreement due to disagreement between the stakeholders, but a report has been published. However, implementation was not binding anyway because it was only a pilot project. EU and national level actors were not involved but motivated for the process. Instead, the involvement process included actors from several lower levels which cooperated fine. New cooperative fora were established but they did not contribute much new to existing informal cooperation inherent in the German water and environmental sector.

Leine-Unstrut Forum, Elbe River Basin, Germany

This case is about the establishment and working of the Unstrut-Leine-Basin-Forum, a participatory regional forum. The Forum has been set up by the Thuringia government, in the context of WFD implementation. The Forum has got consulting competences and is expected to give comments to specific issues during the implementation process. During the first meetings, pilot measures were prioritised. These pilot measures were proposed by the public or stakeholders and then pre-selected on specific and accepted criteria by the state environmental agency. Actors from the political-administrative, agrarian, industrial and environmental sector were represented.

During discussions, it became clear that all involved stakeholders do not only see their benefit to participate in the Forum but are strongly aware of the efforts it takes for them to participate. The participants were worried that the Forum might only be a cosmetic participation process wasting everybody's time. This is also reflected in the reluctance to get engaged into discussions which might have no outcome and that the meetings should be as short as possible. The procedures were very clear on the fact that in the end the Environmental Ministry of the State of Thuringia in cooperation with the organising sub-agencies would be accountable for the decision (and actually made the decision).

State government convened the regional forum in order to assist public officials in prioritizing water improvement projects in the context of WFD. It is unclear whether the process improved the selection, but it produced an additional arena for debate/information about WFD.

Natura 2000 selection and agro-environmental pilot in Catalunya, Spain

Conflicts between policy levels occurred during the Catalan N2000 selection process. At sub-regional level there was no participation during the selection process. Regional level is relatively weak compared to a strong federal system. Also, conflicts exist between agricultural and environmental ministry at Catalunya State level. Both ministries were headed by different coalition parties. This case highlights the relations between the levels of Catalunya, its provinces and communes. Agro-environmental measures were introduced at local level to

implement N2000 criteria without explicit mentioning of N2000. Implementation was organized from autonomous regions downwards, the national level served only as a transmitter. Downwards interactions are yet unclear.

Monfurado N2000 Management Plan, Portugal

Municipality received legal responsibility for managing N2000 sites, and had access to EU funding. The key stakeholders that were involved included local stakeholders in order to ensure that an effective management plan for the Monfurado area is developed. Generally, the national government adopts EU policies, inducing far reaching changes at high speed, without informing and equipping sub-national and local levels sufficiently. In Portugal, municipalities have the legal responsibility for managing N2000 sites, and form partnerships with other (public) actors to do so – they have some access to EU funding.

Many farmers are dissatisfied with the municipality responsible for the Monfurado site, who they claim defaulted on promises and also failed to supply them with adequate information. Also, farmers did not feel adequately represented by a farmers' organisation, which enhanced mistrust and slowed down the process. Conflict polarised around either environmental or agricultural interests. Generally, national level adopts EU policies inducing far reaching changes at high speed, without sub-national and local levels equipped for implementing them. Environmental NGOs are still weak, but social/workers' movements have a long and enduring tradition in Portugal. Apparently, there was some direct interaction between municipal and EU level. The national level was not much involved. The WFD and the EU Habitat Directive are having, and will continue to have an impact in the area, as will agricultural policies of the EU.

Venice Lagoon, Italy

Over four decades the Venice municipality has initiated attempts to solve the problems associated with Venice floodings. This history is full of conflicts national versus municipal initiatives, left versus right political affiliation, poor civic involvement in the processes, different response options captured by political groupings that are otherwise antagonists. Money questions further complicate the matter. Also, deals between municipalities and the national government have been hampered by changing national governments with opposing visions on the issue. This case is not linked to WFD or N2000.

Removal of Krebsbach Dam, Germany

The choice is between a water reservoir and a floodplain: they provide two mutually exclusive sets of environmental services (including the recreational possibilities of both). The realisation of the floodplain has no flood protection value per se: flood protection eventually has to be restored by additional measures, generating a conflict on who has to bear the costs of implementing these changes.

The WFD played no role in the decision to remove the dam and create a floodplain. The main interactions were between state and local level administration: There was a state-level actor, the Water Provider initiating a project to remove the dam, and a local administration authorising the project and running the authorisation process. Some directly affected residents, e.g. recreational fishers, were consulted through the legally established practice of public hearing, which is mandatory within the authorisation process. This doesn't grant any

decision power as the competent authorities can discretionally dismiss the claims, which they actually did (herewith running the risk of legal litigation after the decision is implemented).

National Park Bavarian Forest, Germany

National park director followed over decades a conservation policy geared to 'let nature take its course' for Germany's oldest NP. When bark beetle mass expansion in combination with storms transformed the forest landscape, local conflict arose. Municipalities and population were against conservation concept: they feared that large chunks of 'dead' forest would cause a breakdown in tourism; secondly, the traditional vision was one of a 'healthy' forest without bark beetles. The park director insisted and, due to good connections to the Bavarian state government, were able to convince the responsible authority that his conservation concept was (i) appropriate and (ii) in line with international expectations. Only when after some years a new park director took office, the communication with local residents and municipalities improved and a compromise in bark beetle management was found. National and EU level did not play any significant role in this case.

National Park Kirkunsag, Hungary

Kirkunsag NP authority bought land within the park boundaries from farmers and leased it back to them for agricultural use. Due to their very restricted budget, NP authority had to seek further sources of income and decided not to lease all of the agriculturally used land anymore but to exploit it directly, consequently receiving EU subsidies. This is possible because NP authority received significant rule making authority over NP land. Conflicts arose between population and NP administration on access to land. The national level did not intervene, e.g. by complementing/adapting EU funding programmes or regulations to national/regional contexts.

After presenting the cases studies, the next two sections will try to delineate same general inferences about multi-level governance and to draw some lessons for stakeholder involvement in water and biodiversity management.

Structuring Stakeholder Involvement Processes in Multi-Level Governance

Decision-making processes on environmental issues can be classified according to numerous criteria: which actors are involved? What is the desired outcome of the process? What is the relationship between actors on the horizontal and vertical governance levels? Which role do the actors assume within the process? What is the legal status of these projects? On a very abstract level all decision making processes deal with two major functions: inclusion and closure (US-National Research Council 2008; Stirling 2008; Renn and Schweizer 2009) and one could use these functions to structure and analyse the 16 cases. Inclusion deals with issues such as (Trustnet 1999; Webler 1999; Wynne 2002):

- Who: stakeholders, scientists, agency staff, politicians, representatives of the public(s)
- What: options, policies, scenarios, frames, preferences
- Scope: multi-level governance (vertical and horizontal)
- Scale: space, time period, future generations

The second major function of all decision making bodies is how to reach closure on a set of options that are selected for further consideration, while others are rejected. *Closure* does not imply to have the final verdict on a development or a management plan. Rather, it represents the product of a deliberation, i.e. the agreement that the participants reached. Any decision process that involves more than one person needs to specify how these actors process information, evaluate knowledge claims and deliberate arguments or preferences. When looking for closure the following aspects are of major importance (Renn and Schweizer 2009):

- How do the participants deal with competing truth claims during the process? Are all competing truth claims reconciled?
- How do participants deal with different and even conflicting interests and values considered and how can collectively binding conclusions be reached?
- How do the participants reach an agreement and how do they structure their final verdicts (majority vote, individual opinions, majority-minority statements etc.)?

The problem is that the more actors, viewpoints, interests and values are included and thus represented in a decision making process, the more difficult it is to reach either a consensus or some other kind of joint agreement. Therefore, inclusion and closure are often in tense relationship with each other. The more inclusive the more difficult the deliberation process tends to be in terms of accomplishing a common agreement.

A second dimension for structuring and analysing the 16 case studies refers to the task that is being performed in each case. Some cases are only about input of additional knowledge, some others are about reconciling conflicts and yet others are about joint decision making. Since there are as many specific tasks as there are cases we need some generic classification that helps us to typify a wide variety of tasks and apply them to the cases in our analysis. For this purpose we borrow from the risk literature a classification that addresses three major challenges– complexity, uncertainty, and ambiguity (Klinke and Renn, 2002; IRGC, 2005, pp29f; Renn 2008: 75ff):

Complexity. Complexity is introduced when the causal relationship forms a multifaceted web of causal relationships, where many intervening factors may interact to affect the outcome of an event or an activity (WBGU, 2000, p194ff). Complexity requires sophisticated modelling, which often defies common–sense or intuitive reasoning. Yet, if resolved, it produces a high degree of confidence in the results.

Uncertainty. The less well known and understood this causal web is, the more uncertainty is introduced into the system. Uncertainty reduces the strength of confidence in the estimated cause–and–effect chain (Stirling, 1998; van Asselt, 2000). Environmental decisions must consider more carefully the uncertainties which characterize both the benefits and the risks.

Ambiguity. Ambiguity arises when differences exist in how individual actors or stakeholders value some input or outcome of the system (IRGC, 2005, p30). It is based on the question of what our knowledge about environmental impacts mean for understanding the effects of human interventions into the environment (interpretative ambiguity), and what kind of decisions or actions are justified once the impacts and their uncertainties are characterized (normative ambiguity). In all environmental arenas, ambiguity plays an

important role because plural knowledge and value input are difficult to reconcile and overarching arguments which might lead to a consensus are hard to find or to be approved of by all parties (Luhmann, 1990; Harrison and Hoberg, 1994, pp6, 168ff; Horlick-Jones, 1998; Jasanoff, 1998).

Different evaluation and management strategies follow from the analysis of these three challenges. If the problem is complexity, an environmental policy maker is well advised to gather the best expertise and to regulate on the basis of state-of-the-art knowledge in ecology and related sciences (see also van den Daele, 1992; Charnley, 2000, p16f). It does not make much sense to incorporate public concerns, perceptions or any other social aspects within the function of resolving (cognitive) complexity, unless specific knowledge of these groups helps to untangle complexity. Complex phenomena demand almost equally complex methods of assessments.

If the problem is uncertainty, however, knowledge is either not available or unattainable due to the nature of the hazard. Under these circumstances, environmental policy makers have to rely on resilience as the guiding principle for action (Wynne, 1992; Coolingridge, 1996; WBGU, 2000, pp176ff). Decisions based on uncertainty management require, therefore, more than input from professionals and specialists. They must include stakeholder concerns, economic budgeting and social evaluations. The focal point here is to find the adequate and fair balance between the costs for being overcautious versus the costs of being not cautious enough (van den Daele, 2000, p215; IRGC, 2005, p52).

Trade-offs are even more complex when it comes to resolving ambiguity. Although scientific expertise is essential for understanding ambiguities, it cannot prescribe the value trade-offs to resolve them (Charnley and Elliot, 2000; van Asselt, 2000, pp165ff; Renn, 2004; van den Hove, 2007). In addition, ambiguities cannot be resolved by increased efficiency since the outcome in itself is controversial, not just the distribution of costs. The controversial issues in environmental debates focus on differences between visions of the future, basic values and convictions, and the degree of confidence in the human ability to control and direct its own destiny. This is the place where participatory processes are required from a social-analytical, as well as normative, viewpoint (Bohman, 1997, 1998; Cohen, 1997).

The distinction in complexity, uncertainty and ambiguity can serve as a guide for classifying stakeholder involvement processes. Issues which pertain to a high degree of complexity but little uncertainty and ambiguity demand deliberative processes that are focused on knowledge and expertise. High uncertainty calls for deliberative processes that emphasize reflection about fairness and equity in benefit- and burden-sharing. Issues which trigger off major ambiguities and controversies necessitate deliberations about future visions, basic values and aspirations. For each of these three risk formations there is a pool of deliberative instruments to choose from. If a risk is associated with two or all three characteristics (high complexity, uncertainty and ambiguity), one is well advised to combine the respective instruments from each pool. Table 1 provides an overview of the three pools of instruments and their functions for environmental policy making (Renn 2008, p336).

Table 1: *Pool of instruments for structuring stakeholder involvement processes*

	Challenge	Objective	Function	Instruments
Pool 1	Complexity	Inclusion of best available knowledge	Agreement on causal relations and effective measures	Expert panels, expert hearings, meta-analysis, Delphi method, etc.
Pool 2	Uncertainty	Fair and acceptable arrangement for benefit- and burden-sharing	Balancing costs of under-protection with costs of overprotection facing uncertain outcomes	Negotiated rule-making, mediation, roundtables, stakeholder meetings, etc.
Pool 3	Ambiguity	Congruency with social and cultural values	Resolving value conflicts and ensuring fair treatment of concerns and visions	Citizen advisory committees, citizen panels, citizen jury, consensus conferences, public meetings, etc.
	Combination	Meeting more than one challenge	Meaningful and effective integration of functions	Selection from each of the three pools

The following section will discuss these two structuring approaches with reference to the cases, i.e. the descriptive tool of inclusion and closure as well as the analytical tool of how the cases match the requirements for resolving complexity, dealing with uncertainty and handling ambiguity. In addition, we will focus on the question of how the interactions between the horizontal and vertical levels influence the participatory processes.

Inclusion and Closure: Improvisation rather than structured planning

Table 3 provides an overview of the main variables on inclusion and closure and lists the degree of conflict with respect to complexity, uncertainty and ambiguity. The main impression is that hardly any of the 16 cases had clear provisions for whom to include, how to deal with competing or conflicting value claims and how to finalize an agreement at the end of the process. In several cases the competences between the different levels were unclear and thus the scope of the project was also unclear. The case descriptions also revealed that the organisers of these stakeholder involvement processes were eager to keep control over the process, to retain flexibility in terms of range, involvement of actors and decision-making processes. Although not visible on first glance, all cases do not fit neatly in any of the three categories of knowledge input (dealing with complexity), negotiation of fair burden and benefit sharing (dealing with uncertain outcomes) and deliberation about future visions and worldviews (reconciling ambiguity). They constitute hybrids that place more or less emphasis on each of three challenges.

Table 3: See ANNEX

In terms of EU influence, it appears that Natura 2000 had an initiating effect on many of these cases or led a party involved in a longer process to pick up the issues again. However, Natura 2000 provided no guidance of how to structure or organize public involvement processes. All cases under Natura 2000 that we investigated showed hardly any sign of a well-structured or organized process but followed a typical muddling through approach by which public officials tried to pacify local residents and provided at best ad hoc procedures for giving stakeholders a public forum. This can partly be explained by the fact that many areas designated under Natura 2000 have long previous histories of often contested protection efforts. Another reason is the date of origin of the Habitats Directive: Building on the 1979 Birds Directive, the Habitat Directive was established in 1992 – a time where participation was less part of

legislation than it is now (Rauschmayer et al. 2009a). The later Water Basin Directive that explicitly demands public involvement tends to be more instrumental in providing not only incentives but also some directions for public consultations. In this application area we could detect some basic structural procedures such as hearings, focus groups or round tables. Yet this result may be influenced by the country selection (the countries differed for the two subject areas).

Turning to different countries, Germany and the United Kingdom tend to be more formalized and organized in designing participatory processes. They also have issued rules for closure in these processes and initiated some safeguards for accountability. The southern European countries relied heavily on muddling through procedures with no clear structure, fuzzy mandate and ad hoc consultation sessions. In several of these the distribution of competences between different governmental levels was part of the conflict and contested by one or more of the parties. This can partially explain why none of the cases studies in Southern Europe (Spain, Portugal, Italy) reached closure so far. This was also true for the two German cases in which consensus was sought but not accomplished.

It is puzzling that all 16 case studies had no clear provisions for inclusion and closure. Even the more structured processes in Germany and partially in the UK were characterized by many ad hoc improvisations and unclear deliberation and decision rules. Options were limited for the participants to design their own rules of deliberation and decision making procedures. The verdict of the participants had limited direct influence on decision making. However, the influence of participation on public debates may well have significant impact on the decisions as the participatory events were published in the press and evoked discussions outside of the participatory processes, for example in city councils or state parliaments.

The conditions for conducting participatory processes have often been sub-optimal. The fear of future restrictions due to poor communication (as e.g. in the case of N2000 site selection in Finland), or a conflict history of previous controversial interventions (e.g. in Bavarian Forest NP) presented serious obstacles. Furthermore, the lack of professional capacity in steering complex social processes (e.g. Monfurado case), the ambiguity of the mandate (e.g. Leine-Unstrut case) and the frequently conflicting interests of different government agencies and authorities involved (e.g. Catalunya and Venice cases), further enhanced the difficulties. At the same time, however, there were also cases where the close relationships among stakeholders at local level and having good connections to higher policy levels provided favourable settings for more effective stakeholder involvement (Lake Lempälä, and River Ribble cases).

Matching purpose to structure: complexity, uncertainty and ambiguity

The theoretical literature on participation provides many guidelines for designing involvement processes according to the task: improving knowledge (complexity); dealing with uncertain outcomes of decision options (fair burden sharing) and finding agreements on common visions and living conditions (Demos 2004; Renn 2008: pp284ff). The agencies or organisations that were responsible for conducting the participatory exercises in the 16 case studies largely did not apply the recommendations of this literature in selecting the methods

and approaches used for achieving participation. In only three out of 16 cases a distinctive design of a participatory process could be identified, all others consisted of ad hoc events with no or hardly any visible common thread. The river Ribble case, the Krebsbach dam case and in particular the Hase river case showed a well-structured plan including the recommended use of instruments and the inclusion of pre-defined goals. The Krebsbach case was based on a public hearing. However, this instrument is not very suitable for reconciling ambiguity.

The Hase river case combined the instruments of platform (Round Table) and focus groups. These instruments are appropriate for resolving ambiguity and dealing with complexity (Renn and Schweizer 2009). Yet, the desired consensus was not reached. So even working by the book is no guarantee for success. However, even without consensus the participants demonstrated a high degree of satisfaction with the process. The Ribble case also followed a well structured Round Table approach and, similar to the Hase river case, the organisers and the participants were quite comfortable with the process and this time also with the results.

Looking over the 16 cases, most of them related to some element of ambiguity. The outcome of reconciling visions or future expectations was frequently mentioned as well as the desire to resolve value conflicts and different interests. The second most widely mentioned purpose referred to gaining more knowledge. In particular the Finnish case studies were inspired by using amateur knowledge in designing biodiversity policies. Hardly any of the 16 cases was directed towards treating uncertainty. This is surprising given the high interest of participation specialists in highlighting uncertainty as a major topic for deliberation and as a major reason for conducting public participation (Stirling 2008; Horlick-Jones et al. 2007). This lack of attention to uncertainty could have been caused by the two fields of application: biodiversity and water basin management. However, both topics are in principle highly affected by issues of uncertainty, in particular given global climate changes and rapid land use alterations.

The main impression left by the 16 case studies is that public officials are aware of interest and value differences among their constituencies and use participatory events as an opportunity to have these differences voiced in a public arena. Where public involvement processes serve only legitimization purposes by following the EU directions, their potential for quality improvement of the decision outcomes is very limited. Where the mandate remains vague, the expectations and convictions about participation shape much of its potential. In several cases the expectation is limited to appeasing public demands for inclusion and to meeting the formal requirements of EU legislation.

Multi-level governance: Old wine in new hoses

The issue of horizontal and vertical governance has been a popular topic in the social sciences and in the theoretical analysis of new governance structures (Zürn 2000; Layll and Tait 2004). The reality seems to reflect this distinction, but only in a superficial way. The new governance structures are more or less superimposed on the old structures and serve more as a new legitimization strategy by the conventional political actors than as a structural tool towards more inclusiveness or democratic involvement. Yet, both the directives and the role that participation plays within them influence how multi-level governance evolves. The 16 case studies demonstrate that the EU level has two major functions: first, to initiate a new

involvement process and, second, to serve as a scapegoat for failures of local and State policies. All 16 case studies gained momentum from EU policies. In fact, they can be considered as central towards recognising the importance of civic engagement in environmental affairs. But meaningful participation seems to highly depend on the views held about participation by the local/regional organisers of the process. While this seems a trivial observation at first sight, it is worthy to be considered: Even though policy makers at higher policy levels are better equipped with resources and legal room-to-manoeuve, their requirements of, expectations about and support for stakeholder involvement are limited by convictions and settings at site level. While local and regional officials sometimes blame the EU for the emergence of conflicts that resulted from implementing mandatory directives, these conflicts find their roots rather in poor procedural management and in conflicting interests over resources than in the participatory requirements per se.

The relationship between local, regional (State) and national (Federal) level was mostly characterized by conflicts of power and responsibility among the governmental actors. This well-known pattern of politics played a role in many of the cases but was often camouflaged by using non-governmental actors as (involuntary) assistants for maintaining or gaining power vis-a-vis the next government level. For example, in the Monfurado case it was the local officials who mobilized the local farmers to gain more power and influence for themselves against the higher powers levels of the central government. In the agro-environmental pilot project the two affected ministries mobilized their constituencies to fight against each other.

The ideal picture of vertical subsidiarity and cooperation between governmental and civil society representatives is hard to find in any of the 16 case studies. Multi-level governance is either perceived as a “big mess” that is hard to deal with or as an opportunity to play strategic games by mobilizing allies from one’s own constituencies. The impression of “Muddling through” once coined to describe the corporatist and lobbyist government style of the United States (Lindbloom 1959; 1965) might appropriately describe parts of the European environmental policy arena. Yet this interpretation might be too simple. Setting up a comprehensive network of areas to protect biodiversity in a region as large and diverse as the EU is an institutional challenge that requires a complex interplay of different levels. The best distribution of competencies and adequate procedures of interactions between levels can not easily be derived from theory and there is little prior experience to build upon in how to best achieve this task.

Equally, achieving ‘good ecological status’ of rivers in a cost effective and sustainable manner is not a trivial task – for many settings we actually do not know how best to reach this goal. Participation can be viewed also as a strategy for tackling this challenge: While the cases illustrate a realm of potential difficulties, they can also be interpreted as down-to-earth experiences with innovative governance processes - in pursuit of the highly challenging task of sound water management. Compared to the practices of centrally managed and non-coordinated sector policies this is important progress.

We can interpret ‘Muddling through’ also as trial-and-error learning processes for identifying locally appropriate structures and procedures for involving people in implementing the directives. Independently of the degree of interest or opposition of the authorities involved, participatory processes *cannot* succeed without adapting, improvising and experimenting

along the way: The interplay of multiple actors, interests and values across several policy levels and in parallel arenas prohibits us to meaningfully separate ‘participation’ as a discrete, process from the continuously evolving wider governance context which could be a priori designed and controlled.

Conclusions

In theory, a combination of analytic and deliberative instruments (or stakeholders and the public) is instrumental in reducing complexity, necessary for handling uncertainty and mandatory for dealing with ambiguity. Uncertainty and ambiguity cannot be resolved by expertise only, even if the expertise is uncontested. In situations of high uncertainty, economic balancing between overprotection and underprotection requires subjective evaluations of fair benefit-sharing and risk-sharing. Furthermore, the interpretation of ambiguous consequences requires the input of public preferences and values. Neither agency staff nor scientific advisory groups are able or legitimized to represent the full scope of public preferences and values. This is a compelling reason for broadening the basis of decision-making and including those who have to ‘pay’ in terms of bearing the cost for stricter regulatory requirements or being exposed to an uncertain hazard. This said, we emphasize the need for further monitoring and analysis of participatory processes: None of the 16 cases were characterized by major or urgent crises and several of the cases were pilot schemes with a relatively high availability of public funds to mitigate impacts or experiment under conditions hardly typical for other environmental projects.

How can and should environmental policy makers collect public preferences, integrate public input within the management process, and assign the appropriate roles to technical experts, stakeholders and members of the public? This paper introduces the distinction between three different pools of participatory instruments. Each of the three pools is predominantly suited to dealing with problems of complexity (pool 1), uncertainty (pool 2) and ambiguity (pool 3). The objective is to design a combination of two or more of the available instruments from each pool depending upon the diagnosed characteristics of subject in question..

When looking onto the reality, the picture is more sobering. The analysis of 16 case studies on public participation in biodiversity and waster basin management revealed that in spite of the promises of public participation and in spite of the many valuable guidelines for making public participation work, the reality of public involvement is dominated by ad hoc procedures and non-reflected use of participatory instruments. This can partially be explained by the fact that many of the organizing institutions had little prior experience or expertise on more encompassing participatory processes. It can further be interpreted as an inherent characteristic of on-the-ground attempts to innovate processes for complex tasks. However, the situation was in several cases marked by conflictive contexts, and power game playing among governmental actors on different levels.

This does not reduce the importance of the Directives. In fact, they can be considered as central towards recognising the importance of civic engagement in environmental affairs outside established parliamentary processes. Furthermore their influence in this regard is not limited to Eastern European countries, but provided significant justification for ‘trying out new things’ in all European countries. The mixed record of practical experience should in no

way hide the value of this shift. Even though few of the 16 cases (not all are completed yet) reached the desired goals of meaningful involvement of stakeholders in pursuing and developing well-informed and well-debated management strategies for water and for biodiversity, in many cases they constitute advances in both, environmental awareness and in democratic decision making.

The case study approach does not allow an analytical inference about cause and effect. Yet it may be legitimate to speculate that the mere provision of recommending or even prescribing public involvement on the EU level is insufficient to improve the quality of environmental decision making. We recommend that the EU invests more resources into professional assistance and capacity building for process facilitation to those countries and agencies that feel overstressed by this demand and, second, provide closer follow-up and oversight over the implementation of its demand for more public input. Only by ensuring better quality of participatory processes and by training those who are obliged to organise and conduct these involvement processes can the potential of public participation be mobilized to its full potential. This long-term investment could best be jointly taken on by EU and national governments. Its co-benefits will be significant for the future implementation of environmental policies and for the European integration and citizens' identification with the European integration process.

Many arguments in favour of analytic–deliberative processes and their theoretical foundations provide ample evidence for the potential contribution of public involvement to improving environmental policies (Beierle and Cayford 2002; US-National Research Council 2008). Given the experiences with the 16 case studies it is an open question whether deliberation can deliver what it promises in theory. The empirical account is still incomplete.

Literature

- Antunes, P. et al., (2010, in preparation). WP2: Assessing multi-level activities in Water and Biodiversity Governance, UFZ Discussion Papers. Leipzig, Helmholtz-Centre for Environmental Research,
- Beierle, T. C. and Cayford, J. (2002) *Democracy in Practice: Public Participation in Environmental Decisions*, Resources for the Future, Washington, DC
- Benz, A. and Eberlein, B. (1999) 'The Europeanization of Regional Policies: Patterns of Multi-Level Governance', *Journal of European Public Policy*, vol 6, no 2, pp329–348
- Bohman, J. (1997) 'Deliberative Democracy and Effective Social Freedom: Capabilities, Resources, and Opportunities', in J. Bohman and W. Rehg (eds) *Deliberative Democracy. Essays on Reason and Politics*, MIT Press, Cambridge, pp321–348
- Bohman, J. (1998) 'Survey Article: The Coming of Age of Deliberative Democracy', *The Boholm, A.* (1998) 'Comparative Studies of Risk Perception: A Review of Twenty Years of Research', *Journal of Risk Research*, vol 1, no 2, pp135–163
- Charnley, G. (2000) *Democratic Science: Enhancing the Role of Science in Stakeholder-Based Risk Management Decision-Making*, Report of Health Risk Strategies, Washington, DC, July
- Charnley, G. and Elliott, E. D. (2000) 'Risk versus Precaution: A False Dichotomy', in M. P. Cottam, D. W. Harvey; R. P. Paper and J. Tait (eds) *Foresight and Precaution: Volume 1*, Balkema, Rotterdam and Brookfield, pp209–212
- Cohen, J. (1997) 'Procedure and Substance in Deliberative Democracy', in J. Bohman and W. Rehg (eds) *Deliberative Democracy: Essays on Reason and Politics*, MIT Press, Cambridge, pp407–437

- Collingridge, D. (1996) 'Resilience, Flexibility, and Diversity in Managing the Risks of Technologies', in C. Hood and D. K. C. Jones (eds) *Accident and Design: Contemporary Debates in Risk Management*, UCL Press, London, pp40–45
- Dake, K. (1991) 'Orienting Dispositions in the Perceptions of Risk: An Analysis of Contemporary Worldviews and Cultural Biases', *Journal of Cross-Cultural Psychology*, vol 22, pp61–82
- Demos (2004) *See-Through Science: Why Public Engagement Needs to Move Upstream*, Monograph by J. Wisdon and R. Willis, Demos, London
- Drottz-Sjöberg, B.-M. (1991) *Perception of Risk: Studies of Risk Attitudes, Perceptions, and Definitions*, Center for Risk Research, Stockholm
- EC - European Commission (2001) *Methodological Guidance on the Provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC. Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC*
- EC – European Commission (2003) *Common Implementation Strategy for the Water Framework Directive (2000/60/EC). Guidance Document N°8.*
- EC – European Commission (2007). Towards Sustainable Water Management in the European Union. Communication From The Commission To The European Parliament And The Council, Commission Staff Working Document COM(2007) 128 final, [SEC(2007) 363]. Brussels, 22.3.2007.
- Harrison, K. and Hoberg, G. (1994) *Risk, Science and Politics*, McGill–Queen's University Press, Montreal
- Horlick-Jones, T. (1998) 'Meaning and Contextualization in Risk Assessment', *Reliability Engineering and Systems Safety*, vol 59, pp79–89
- Horlick-Jones, T. (2007) 'On the Signature of New Technologies: Materiality, Sociality, and Practical Reasoning', in R. Flynn and P. Bellaby (eds) *Risk and the Public Acceptance of New Technologies*, Palgrave, Basingstoke, pp41-65
- IRGC (International Risk Governance Council) (2005) *Risk Governance: Towards an Integrative Approach*, White Paper no 1, O. Renn with an Annex by P. Graham, IRGC, Geneva
- Jasonoff, S. (1998) 'The Political Science of Risk Perception', *Reliability Engineering and Systems Safety*, vol 59, pp91–99
- Klinke, A. and Renn, O. (2002) 'A New Approach to Risk Evaluation and Management: Risk-Based, Precaution-Based and Discourse-Based Management', *Risk Analysis*, vol 22, no 6, pp1071–1094
- Luhmann, N. (1990) 'Technology, Environment, and Social Risk: A Systems Perspective', *Industrial Crisis Quarterly*, vol 4, pp223–231
- Lindbloom, C. (1959) 'The Science of Muddling Through', *Public Administration Review*, vol 19, pp79–99
- Lindbloom, C. (1965) *The Intelligence of Democracy. Decision Making through Mutual Adjustment*, New York, NY
- PRB – Pilot River Basins (2007). Pilot River Basin Activity Report phase II: 2005-2006 Water Framework Directive implementation pilot activities – key challenges and recommendations from the Pilot River Basins. Report prepared by Pilot River Basins, European Commission, DG Environment and the Joint Research Centre, 13 June 2007.
- Rauschmayer, F., Wittmer, H., Paavola, J., (2007). Multi-level Governance of Natural Resources: Tools and Processes for Water and Biodiversity Governance in Europe - A European Research and Training Network, UFZ Discussion Papers: No. 3/2007 - GoverNat 1. Leipzig, Helmholtz-Centre for Environmental Research,
- Rauschmayer, F., van den Hove, S., Koetz, T. (2009a). Participation in EU biodiversity governance: How far beyond rhetoric? *Environment and Planning C* 27(1), 42-58. DOI: 10.1068/c0703j

- Rauschmayer, F., Paavola, J., Wittmer, H. (2009b). European Governance of Natural Resources and Participation in a Multi-Level Context: An Editorial. *Environmental Policy and Governance* 19(3), 141-147. DOI: 10.1002/eet.504
- Rauschmayer, F., Berghöfer, A., Omann, I., Zikos, D. (2009c). Examining Processes or Outcomes? Evaluation Concepts in European Governance of Natural Resources. *Environmental Policy and Governance* 19(3), 159-173. DOI: 10.1002/eet.506
- Renn, O. (2004) 'The Challenge of Integrating Deliberation and Expertise: Participation and Discourse in Risk Management', in T. McDaniels and M. J. Small (eds) *Risk Analysis and Society: An Interdisciplinary Characterization of the Field*, Cambridge University Press: Cambridge, MA, pp289–366
- Renn, O. (2008) *Risk Governance. Coping with Uncertainty in a Complex World*. Earthscan: London
- Renn, O. and Schweizer, P (2009) 'Inclusive Risk Governance: Concepts and Application to Environmental Policy Making', *Environmental Policy and Governance*, vol 19, pp174-185
- Stirling, A. (1998) 'Risk at a Turning Point?' *Journal of Risk Research*, vol 1, no 2, pp97–109
- Stirling, A. (2008) "'Opening Up" and "Closing Down": Power, Participation, and Pluralism in the Social Appraisal of Technology', *Science, Technology and Human Values*, vol 33, no 2, pp262-294
- Swyngedouw E, Page B, Kaika M. (2002). Sustainability and Policy Innovation in a Multi-Level Context: Crosscutting Issues in the Water Sector. In *Participatory Governance in Multi-Level Context: Concepts and Experience*, Getimis P, Heinelt H, Kafkalas G, Smith R, Swyngedouw E (eds). Leske & Budrich: Opladen, pp 107- 131.
- Tait, J. and Lyall, C. (2005) 'A New Mode of Governance for Science, Technology, Risk and the Environment?', in C. Lyall and J. Tait (eds) *New Modes of Governance*, Ashgate, Aldershot, pp177–188
- Trustnet (1999) *A New Perspective on Risk Governance*, Document of the Trustnet Network, EU, Paris, www.trustnetgovernance.com, accessed 11 August 2005
- US-National Research Council of the National Academies: *Public Participation in Environmental Assessment and Decision Making*. Washington, D.C. (The National Academies Press: September 2008)
- van Asselt, M. B. A. (2000) *Perspectives on Uncertainty and Risk*, Kluwer, Dordrecht and Boston
- van den Daele, W. (1992) 'Scientific Evidence and the Regulation of Technical Risks: Twenty Years of Demythologizing the Experts', in N. Stehr and R. V. Ericson (eds) *The Culture and Power of Knowledge. Inquiries into Contemporary Societies*, de Gruyter, Berlin, pp323–340
- van den Daele, W. (2000) 'Interpreting the Precautionary Principle – Political versus Legal Perspectives', in M. P. Cottam, D. W. Harvey, R. P. Paper and J. Tait (eds) *Foresight and Precaution: Volume 1*, A. A. Balkema, Rotterdam and Brookfield, pp213–221
- van den Hove, S. (2007) 'A Rationale for Science–Policy Interface', *Futures*, vol 39, no 7, pp3–22
- WBGU -German Advisory Council on Global Change) (2000) *World in Transition: Strategies for Managing Global Environmental Risks*. Annual Report. Springer, Heidelberg and New York
- Webler, T. (1999) 'The Craft and Theory of Public Participation: A Dialectical Process', *Risk Research*, vol 2, no 1, pp55–71
- Wynne, B. (1992) 'Uncertainty and Environmental Learning: Reconceiving Science and Policy in the Preventive Paradigm', *Global Environmental Change*, vol 2, June, pp111–127
- Wynne, B (2002) 'Risk and Environment as Legitimatory Discourses of Technology: Reflexivity Inside Out?', *Current Sociology*, vol 50, no 30, pp459–477
- Zürn, M. (2000) 'Democratic Governance Beyond the Nation State: The EU and Other International Institutions', *European Journal of International Relations*, vol 6, no 2, pp183–221

Annex: Table 3:

Case Study	Inclusion	Closure	Complexity	Uncertainty	Ambiguity	Levels
Amateur Naturalists regional/ national	Voluntary groups	Top-down rules; Consultation	fairly high	low	low	regional/national
Implementing N2000	some NGOs	Top-down rules; Mandate unclear	fairly high	low	high	EU to local
Lake restoration	Local stakeholders	Informal rules; Consensus	fairly low	low	low	local
Tatras NP	Local and national stakeholders	Muddling through; More protest than structured process	High	medium	medium	local/ national
PAN accreditation	Local and national Forest agencies, Forest owners	Muddling through; Ad hoc consultations	fairly low	low	medium	local/ national
River Ribble	50 individuals representing stakeholders	Top-down rules; Structured deliberation	medium	medium	high	local/ EU
Pilot RBM	Local stakeholders	Top-down rules; Consultative body	medium	low	low	local/ regional
Expert RBM	Scientific experts	Top-down rules; Consultation only	High	low	low	local/ national
Hase river	Stakeholders citizens	Highly structured: platform and focus groups; Consensus intended but not reached	High	medium	high	local
Elbe River Basin	Stakeholders local/ State Agency, Economic Farmers, Environmentalists	Top-down rules only; Consultative	medium	low	high	local/State
Agro-environmental pilot	Selected stakeholders	Top-down rules; Ad hoc consultations	medium	low	medium	local/state (two ministries) EU

GoverNat

Monfurado	Farmers, NGOs	Top-down rules; Ad hoc meetings	medium	low	high	local/ EU
Venice lagoon	Multiple coalitions	Muddling through; Changing coalitions	High	medium	high	local/ national
Krebsbach dam	Organized local stakeholders	Public hearing; Consultative	Low	low	high	local/ state
Bavarian Forest NP	Park agency, local residents	Protest from residents; Ad hoc consultations	medium	medium	high	local/ state
NP Kirkunsag	Farmers, residents	Muddling through; Ad hoc protest	Low	medium	medium	local/ national/ EU