'Leadership for Sustainable Environments'
- Conceptual Basis of the International M.Sc. Programme 'Environmental Governance'
at the University of Freiburg

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The rising interest in Environmental Governance and respective educational pro-grammes

In recent years a literal 'governance-hype' could be observed, documented for example by the frequency of use of the term 'governance' in journals listed in the Social Science Citation Index (Jann 2005). Therefore it is not surprising that the interest in an MSc programme dealing with governance in relation to environmental issues was also very high. Within the very short time from the official launch of the program to the application deadline of only three months more than 230 enquiries were received, which finally resulted in 150 complete applications. For the winter term 2005/06 in total 20 students from 16 different countries were accepted representing a broad range of first academic degrees in fields of economics, natural resource management but also in engineering - frequently with relevant professional experience. Not only applicants but also media and international organisations have found the topic environmental governance to be a promising concept for the solution of today's environmental problems, and have shown great interest in the new program. And also the analysis of job offers revealed a increasing interest in environmental governance, documented by a small but steadily growing international job market on the European level but an especially stronger in the Anglo-American and international region.

The international MSc programme 'Environmental Governance' launched by the University of Freiburg in winter semester 2005/2006 has taken up these challenges by providing a thorough understanding of governance mechanisms in relation to the sound use and conservation of environmental resources. But is the establishment of an MSc programme 'Environmental Governance' more than a reaction to the 'governance trend' in general? The aim of the paper is to demonstrate the need for training in environmental governance at an academic level and how such an educational programme has been implemented at the University of Freiburg in Germany. This paper begins by examining the understanding of environmental governance as the basis for the design of the programme. In the second section the implications for the study programme regarding strategic design as well as methodological aspects will be presented. The third section describes the formal aspects of the programme.

Conceptual basis of Environmental Governance

Dependent on the perception of scholars, consequences of globalization, internationalization, state failures and the rise of neoliberalism - or all together -, are in general provided as explanations for the career of the term 'governance' (Jann 2005; van Kersbergen and van Waarden, 2001). Blurring functional, structural and territorial boundaries are seen as the main reason for the shift from hierarchical steering by government to regulation by governance arrangements involving private and public actors at the same time (Benz 2004).
Empirical research indicates that blurring functional, structural and territorial boundaries also account for the observable shifts in environmental governance worldwide (e.g., Kanie and Haas 2004). Consequently, (political) scientists have interpreted environmental governance as

a specific form of governance in general (e.g., Durant et al. 2004), comprising all forms and types of social regulation by private and public actors, however with a special focus on environmental issues (Köck 2005: 323). Nevertheless, we argue that the career of the term governance in environmental policy can be also explained by the characteristics of environmental problems and their specific challenges they pose on regulation.

There is growing consensus that environmental problems have to be characterized as so-called "wicked problems", meaning that there is no accepted definition of the problem, that one problem is interrelated with others, that there is no right or wrong answer, only more or less useful solutions, and even worse that the problem is constantly shifting (e.g. Stankey et al. 1992, Friedmann 1987). The reason for the emergence of "wicked" problems is seen in the enormous uncertainties, given the complexity, pervasiveness, multiple causations and mutual interdependencies of natural environments. The uncertain basis of most decisions with regards to the environment is reinforced by the provisional nature of most facts on the environment: dynamic changes, non-linear threshold effects as well as catastrophic, irreversible and discontinuous features seem to undermine any effort of predictive explanations for the environment.

Still, the characterization of "wicked problems" might also hold true for many other policy fields. However, what might be a specific feature of environmental problems is the continuous "sound of clashing certainties" (Schwarz and Thompson 1990) about the resilience and stability of natural environments. This is best illustrated by the so-called "myths of nature"-concept developed by Holling (1979, 1986) and Timmermann (1986). They found in their analyses of managed ecosystems that different managing institutions faced with exactly the same kinds of situation, adopt strategies based on different interpretations of ecosystems stability. They identified four different "myths of nature" whereby the relation of a ball to its surface can represent the model of stability and resilience of nature graphically (see figure 1).
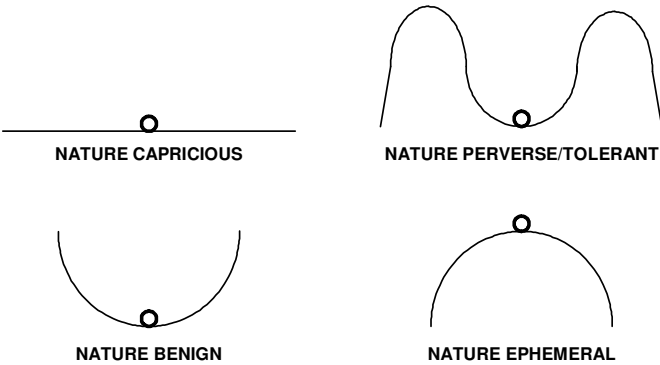

NATURE CAPRICIOUS   **NATURE PERVERSE/TOLERANT**

NATURE BENIGN   **NATURE EPHEMERAL**

Figure 1: Four "myths of nature" representing different, empirically backed up representations of environmental stability and resilience

These four different "myths of nature" pose an enormous challenge on all efforts of environmental regulation, as – even though mutually exclusive – all of them are backed up by sound

empirical evidences and therefore contain at least partially the truth. Facts about the environment are thus not only used politically, but are obviously also formed politically (Schwarz and Thompson 1990). Given the innate uncertainties surrounding environmental issues and the immense significance of cultural representations of environmental change in shaping political discourse, there has been growing interest in social constructivist perspectives on relations between society and nature (Jones 2002). This is well illustrated by the recent controversy about Bjorn Lomborg's book "The sceptical environmentalist" and it's claim that the state of the environment is actually going better (e.g., Lomborg 2004).

For a long time the management of environmental problems was considered to be purely a problem of the application (or better: translation into policies) of the contributions of the relevant natural and technical environmental sciences. The limitations of the natural sciences to provide "proofs" about the environment (Oreskes 2004) have cast severe doubts on this perception. Not surprisingly the management of environmental problems is increasingly appreciated to involve the skills of governance as well (De Marchi and Ravetz 1999: 743). Even though no unifying school of thoughts, let alone a stringent set of theories have developed yet, there seems to be emerging consensus on some of the design principles for effective environmental governance arrangements. Environmental knowledge (in the sense of "facts") and the process how to acquire knowledge still form the central point of departure, however in an increasingly alternative interpretation (table 1).

Table 2: *Design principles for effective environmental governance based on emerging consensus about environmental "facts"*

Design criteria	Hints for governance arrangements
Appropriateness	'task-specific' rather than 'general purpose' governance
Pluralism	Equal and effective opportunity to articulate visions in processes of collective judgements
Adaptiveness	Extend time horizons and introduction of elements of foresights
Deliberation	Convergence through overlap, complementarities and integration
Experimental processes	"Learn and tinker, tinker and learn"

In this alternative interpretation, environmental knowledge is no longer limited to scientific knowledge, but is assumed to be specifically created anew in argumentation processes through exchanging perceptions and understandings and through drawing on the stock of life experience and previously consolidated cultural and moral knowledge available to participants in negotiation processes (Healey 1993). The sharp distinction between scientific and ordinary knowledge is thus disappearing, with none of the different information sources being superior. Information is no longer a resource solely provided by external experts into the deci-

sion process. Probably even more important in environmental policy, communicative action in itself "informatizes" and policy results are a foregone conclusion in the process of formulating and agreeing on the information, rather than the later choice after the information is in final form (Innes 1998). Formulation (goal setting) and implementation (identifying means) of policies are no longer distinct, succeeding steps, but inextricably intertwined.

Educating leadership for sustainable environments thus requires a sound knowledge about global environmental and social changes, the ability to reflect on societal decision-processes from different theoretical perspectives and competing conceptual frameworks, as well as the skills to manage such decision-processes effectively.

Strategic design and methodological implications

The MSc programme 'Environmental Governance' responds to these requirements by its underlying tripartite structure *realising – understanding – managing*. At the beginning students will gain profound insight into the concept of sustainable development and different modes of governance. In addition, they will become acquainted with contemporary societal trends and urgent environmental problems with the latter provided by lecturers of the neighbouring MSc programme "Forests, Environment and Bioresources". Building upon this knowledge base, the following modules aim at an in-depth understanding of human – environment interactions. Thus a wide spectrum of different analytical frameworks and theories from social, economic and political science will be elucidated ranging from political ecology, environmental ethics, institutional economics, environmental law, and policy analysis to corporate governance, to name but a few. Lastly, students are offered a variety of opportunities to apply their knowledge and skills in lifelike exercises. Special emphasis is thereby laid on the continuous development and improvement of key qualifications necessary to design and manage social negotiation processes between market economy, government and civil society.

At first glance, this briefly described tripartite structure complies with a classic managerial approach for problem-solving. But a merely textual estimation of the topics of the study programme mirrors the strategic design in an insufficient way. Moreover, such a perception would be especially unable to reveal the main strategic principles of the MSc programme: ability of reflection, procedural and persuasive rationality, context-sensitivity. In the following, their systematic consideration in the design of the MSc programme will be pointed out.

With regard to the *ability of reflection* the above described tripartite structure of the MSc programme must be interpreted in a different way: The introductory modules in global societal and environmental issues aim only partially at teaching assured facts. Instead of obtaining detailed instructions how the world works students rather get challenged with different certainties of scientific knowledge. Taking as example the controversy about Lomborg's book students will recognise that scientists provide rather 'informed options' than definitive proof, as they adhere to differing standards of demonstration and argumentation in varied contexts and disciplines (Oreskes 2004). Consequently, comprehensive knowledge of the comparative

shortcomings of scientific theories as well as scientific methodologies is indispensable for graduates, at least if pluralism of science is recognised as an unavoidable feature of modern societies. Therefore, intensive discussions and comparing reflections on several disciplinary approaches related to environmental problems, also involving argumentative dispute between the lecturers in charge, represent the means applied during the second term. This provocative confrontation with different scientific 'frames' conduces also significantly to students' self-reflection and their ability for reasoned argumentation. In this regard the educational guideline of the MSc programme can thus be phrased as teaching *"not know-how, but know-why"* meaning that lastly only students themselves should draw well-informed and reasoned conclusions about the most fruitful approaches to Environmental Governance.

Nevertheless, students rightfully expect some hints how to "cope with clashing certainties", as effective governance arrangements cannot be derived from instrumental or substantial 'scientific' rationality. Again taking societal and scientific pluralism seriously, students hence will conduct integrated case studies to become familiar with the concept of *'procedural rationality'* as the way a complex negotiation process is organised. While stressing the uncertainties of social interactions, this concept calls for an elementary agreement on 'the rules of the game' as most important prerequisite for overcoming mutual distrust and for encouraging self-governing processes (Blum 1999, comp. Heap 1992). Besides, achieving a basic agreement is also linked with *'persuasive rationality'* as a second useful concept of rationality that focuses on shared beliefs of 'right' behaviour on community level. Consequently, students will learn to take into account, that an actor will probably choose that option that can be convincingly attached to his beliefs through persuasive communication (Fischer and Forester 1993).

Hence, graduates should be able to perform a deliberative role in Environmental Governance. Students will be particularly taught to develop capacities for 'practical judgements' and promote self-transformation (Hajer and Wagenaar 2003). Furthermore, they will to be able to rearrange prevalent meanings in an unorthodox way and to get involved in communicative action and public discourse (Fischer 2003). Though studies of policy-science interactions have assigned a merely indirect and unpredictable 'enlightenment function' to scientific knowledge (e.g., Weiss 1977), this public involvement of experts seem especially meaningful for the initiation and facilitation of societal learning processes in Environmental Governance. Certainly, other abilities are also needed to maintain, support and improve existing governance arrangements: these competencies of moderation, mediation and deliberation will be promoted through the interactive parts of the core modules, special elective modules (environmental conflict management e.g.), the integrated case studies as well as student-organised scientific symposia.

Among these methodological features of the MSc programme especially the integrated case studies have to be highlighted, as they are mainly intended to strengthen students' *sensitivity for contextual framework conditions*. Three modules, each lasting three weeks, are scheduled in which students conduct empirical case studies on various environmental problems in dif-

ferent contexts worldwide. On a strategic level, the case studies will be selected according to the following considerations: Thematically, they ought to represent some of the globally most important environmental problems like water and air pollution, forest decrease, soil erosion or loss of biodiversity. Regarding scales and time frames they ought to range from micro to macro level, from cellular to ecosystem-wide scope, incorporating historical impacts and path-dependency as well as elements of foresight. Geographically, the case studies will be situated in different regions of North America, Central and Eastern Europe, Asia and South America thereby representing developed states, countries in transitions as well as developing countries mainly of the tropical region.

More precisely, the key challenge of the first case study will be to develop an appropriate, integrated strategic environmental assessment in a specific North American or European case. Thereby interdisciplinary group work as well as lifelike circumstances with tight time-frames, rapid response and constant visibility will challenge student's abilities but simultaneously provide opportunities to apply the acquired knowledge in realistic context settings. Focusing on exemplary local and regional governance processes in South America and Asia the second case study intends to familiarise students with the entire toolkit of Integrated Natural Resource Management, specifically with promising techniques to combine quantitative and qualitative, natural and social data. Hereby special emphasis is laid on a holistic claim and the cultural as well as socioeconomic compatibility of the models and results worked out. Besides, medium-term adaptability and susceptibility of proposed solutions to unforeseeable events will be stressed. The third case study then will deepen these experiences by adding geographical concepts like political ecology or risk analysis and illustrate the latter considering outstanding examples of environmentally affected regions like the Aral sea, Chennai or Cascadia.
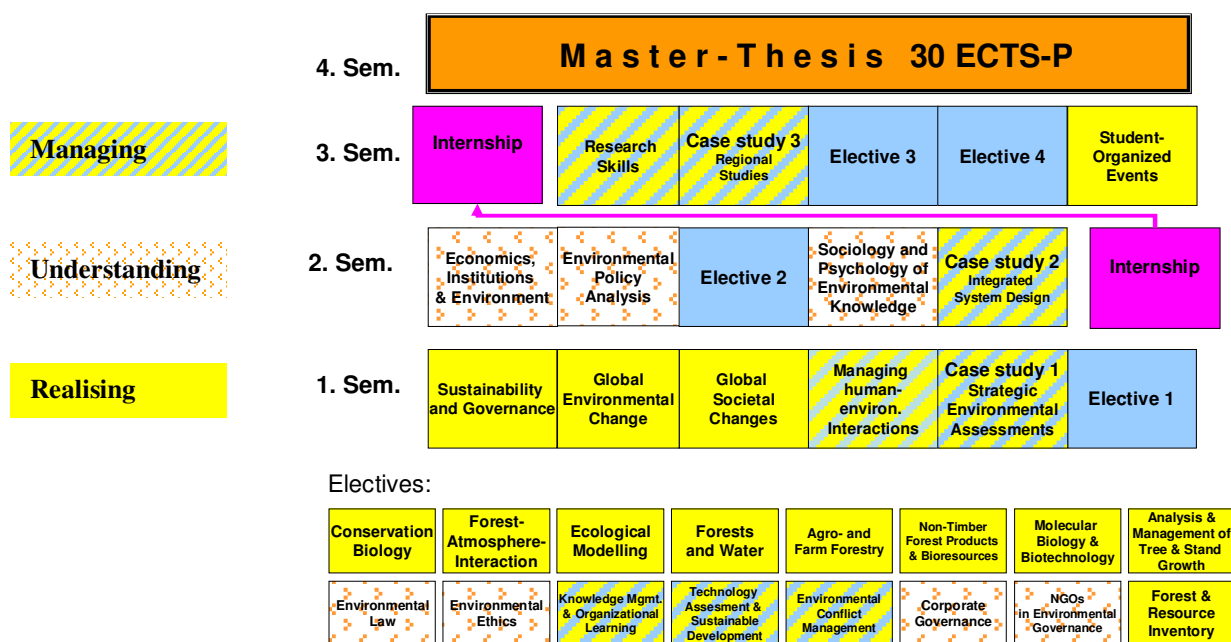
The systematic emphasis on different geographical contexts and multiple levels for societal negotiation processes will be further endorsed through integrated modules in which international experienced tutors from a broad variety of scientific disciplines act in concert. The involved teaching staffs is thereby not limited to affiliates of the Faculty of Forest and Environmental Science, but comprise also scientific lecturer form other faculties and universities as well as versed practitioners from industry, civil society and organisations for development cooperation. And, last but not least the assorted background of students regarding disciplinary qualification and work experience has to be mentioned. As mentioned in the introduction, the students accepted represent 16 countries in different geographic regions assuring an unique spectrum of contextual knowledge which can be used in modules and case studies.

To sum up, the MSc programme Environmental Governance at the University of Freiburg cannot be considered a managerial approach to environmental problems. In contrary the tripartite structure realising – understanding – managing is designed to educate sensible intermediaries and facilitators for sustainable environments. In this regard, three main elements of the strategic design have to be accentuated: continuous advancement of scientific (self-) re-

flection, comprehensive procedural and persuasive rationality, and emphatic awareness for contextual knowledge.

Formal Structure of the study programme

The duration of the programme is two years. Teaching modules are divided into three-week units and conclude with a graded written exam. Students earn 5 ECTS credits upon successful completion of each module. The modules are classified as either core or elective. In total, 120 credits are required. Included is an internship of six weeks and a master's thesis. The following table demonstrates the distribution of the modules.

	4. Sem.	**M a s t e r - T h e s i s 30 ECTS-P**					
Managing	**3. Sem.**	Internship	Research Skills	Case study 3 Regional Studies	Elective 3	Elective 4	Student-Organized Events
Understanding	**2. Sem.**	Economics, Institutions & Environment	Environmental Policy Analysis	Elective 2	Sociology and Psychology of Environmental Knowledge	Case study 2 Integrated System Design	Internship
Realising	**1. Sem.**	Sustainability and Governance	Global Environmental Change	Global Societal Changes	Managing human-environ. Interactions	Case study 1 Strategic Environmental Assessments	Elective 1

Electives:

Conservation Biology	Forest-Atmosphere-Interaction	Ecological Modelling	Forests and Water	Agro- and Farm Forestry	Non-Timber Forest Products & Bioresources	Molecular Biology & Biotechnology	Analysis & Management of Tree & Stand Growth
Environmental Law	Environmental Ethics	Knowledge Mgmt. & Organizational Learning	Technology Assessment & Sustainable Development	Environmental Conflict Management	Corporate Governance	NGOs in Environmental Governance	Forest & Resource Inventory

Instruction does not involve a single lecturer imparting knowledge in the classical lecture format; rather it is crafted by a team of lecturers from different sectors working together. In accordance with the interdisciplinary concept of the course, the team of lecturers comprises representatives from the various disciplines hosted by the Faculty of Forestry and Environmental Sciences. These are for example environmental economics, environmental policy, landscape management, hydrology, geography, natural biology, biochemistry and ecosystem management, to name but a few. The team of lecturers is supplemented by sector representatives from other faculties of the University of Freiburg, from the political sciences, sociology, philosophy, psychology and educational sciences, as well as external research institutes such as the ITAS research centre in Karlsruhe and national and international partner universities.

In table 2 a brief description of the course matter is given. For an anabridged version please refer to www.msc-environmental-governance.uni-freiburg.de

Table 2 Course Matter of the MSc programme Environmental Governance

		Name of the Modules	Brief summary of syllabus
Realising	**Core modules**	• Sustainability and Governance	Vision and principles of SD; Historic background; Importance in political processes; Different meanings, modes and theoretical approaches of the governance concept.
		• Global Environmental Changes	Important environmental problems (water and air pollution, acid rain and forest decline, the loss of forests and biodiversity, global warming etc.); Research process in the environmental and social sciences.
		• Global Societal Changes	Contemporary global societal trends. Topical development debates. Outline of recent conceptualisations of environmental change in social theory and political geography.
	Electives	• Electives of the MSc *'Forests, Environment and Bioresources':*.	Forests and water, conservation biology, ecological modelling, forest-atmosphere interactions, agro and farm forestry, non-timber forest products and other bioresources, etc.
Understanding	**Core modules**	• Environmental Policy Analysis	Comparative discussion of different political approaches (International rational choice, multiple streams, policy networks, advocacy coalition framework, policy discourse analysis); Short case studies.
		• Economics, Institutions and Environment	Economic instruments for governing and tackling environmental problems; Specificities of economics dealing with environment; Evaluation techniques and Instruments; Environmental economics.
		• Sociology and Psychology of Env. Knowledge	(Syllabus under development)
	Electives	• Environmental Law	Key structures and interconnections of main forms of modern environmental law (property rights, administrative regulatory, and trade promotion law); Interactive lectures, readings and short case studies.
		• Environmental Ethics	Historical overview of environmental ethics; Current debate on human responsibilities with regard to nature; Various types of conceptual distinctions as well as philosophy of nature.
		• Corporate Governance	Comparative discussion of the concepts of Corporate Governance, Corporate Social Responsibility and Corporate Citizenship as well as different management systems in general.
		• NGOs in Environmental Governance	Different theoretical approaches regarding the definition, understanding, barriers, and the relation of NGOs to civil society out of an international view; Role of NGOs and their claims.
Managing	**Core modules**	• Managing Human-Environment-Interactions	Exploration of various ways in which societies organize and manage relationships with their environmental context; Focus on five major institutions: property, community, social organizations, markets, law.
		• Case Study 1: Strategic Environmental Assessment	Role of science in governance and policy making; Integrated strategic environmental assessment; Development of interdisciplinary conceptual framework related to environmental management.
		• Case Study 2: Integrated System Design	Integrated Natural Resource Management Approach (INRM); combined, ecologic and socio-economic assessment of biophysical and institutional components; application of adequate tools.
		• Case Study 3: Regional Studies	Concepts of geographical regional studies likewise political ecology, sustainability and risk analysis; case studies covering some of the globally most important environmental problems.
	Electives	• Technology Assessment and SD	Concepts and methodologies of technology assessment (TA); Interdisciplinary, open concept for the analysis of technical developments and their implications, and for the development of options for action.
		• Environmental Conflict Management	Conceptualisation and management of environmental conflicts; Overview on relevant conflict theories. Practical experiences with and established methods in conflict management.
		• Knowledge Management and Organisational Learning	Principles of learning, cognition and instruction; Complex problem solving strategies, especially in the context of decision making, Individual knowledge organisation; Organisational Learning

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