TECHNICAL BRIEF

Issue No. 2

POLICYMIX - Assessing the role of economic instruments in policy mixes
for biodiversity conservation and ecosystem services provision

POLICYMIX WP 6.1 Draft Guidelines for the analysis of institutions shaping biodiversity policy instrument applicability

Primmer, Eeva
Similä, Jukka
Barton, David N.
Christoph Schröter-Schlaack

policymix.nina.no

POLICYMIX WP 6.1 Guidelines for the analysis of institutions shaping biodiversity policy instrument applicability

Primmer, Eeva, Finnish Environment Institute - SYKE

Similä, Jukka, Finnish Environment Institute – SYKE

David N. Barton, Norwegian Institute for Nature Research (NINA)

Christoph Schröter-Schlaack, HelmholtzCentre for Environmental Research - UFZ

Introduction

Institutions play a crucial role in defining what new policy instruments are feasible and in shaping the application of old instruments. For example, the pre-existing rights that land-owners have as to managing their land, and the responsibilities that go with property rights, will have a direct effect on how a new instrument can be designed to encourage conservation. Similarly, the formal division of roles between different authorities with accredited rights and responsibilities can influence how the new instrument is integrated in the existing mix of instruments, i.e. how it is implemented and what impact it can generate. Moreover, long established customary rules, e.g. customary access rules; can influence the implementation of conservation instruments, even though they may be not legally recognized. Hence, the POLICYMIX case studies should include an analysis of the institutional constraints and opportunities in their assessment of policy instruments and their mixes aimed at biodiversity conservation.

Definition of Institutions

Institutions can be understood as norms or rules regarding a particular a set of activities (Ostrom, 1990; Furubotn and Richter, 1990). Institutions, rules and norms are terms that are actually often used interchangeably. In North's often cited definition (1990), an institution consists of informal constraints and formal rules as well as their enforcement mechanisms (North, 1991). Formal rules include the stated rights and obligations (e.g. in legislation), while the layers of informal rules define in a much less explicit fashion what is considered right or appropriate, wrong or inappropriate (North, 1990; Ostrom, 1990). Both formal and informal rules assign behavior, and are backed up by monitoring and enforcement mechanisms. Rules stabilize behavior and advance predictability (North, 1991), even to a point of generating rigidity and inertia (DiMaggio and Powell, 1986).

Institutions shape the ways nature and the environment are perceived and managed. The different rationales that influence human behavior and the pressure it places on the natural environment are often analyzed under the rubric of institutions (Young, 2002; Bromley, 2004; Vatn, 2005). Similarly, institutional analysis of environmental policy captures the interests and socially constructed beliefs about environment and environmental problems (Funtowicz and Ravetz, 1993; Paavola, 2007; Vatn, 2009). Vatn (2006) summarizes these different angles to institutions concisely: "Institutions are the conventions, norms and formally sanctioned rules of a society. They provide expectations, stability and meaning essential to human existence and coordination. Institutions regularize life, support values and produce and protect interests."

Institutions can be divided into the basic institutions of a society (economic, political, social institutions, such as property rights, markets, political governance system) and specific institutions – or instruments - concerning a particular policy area – e.g., legal regulations and informational norms on biodiversity conservation.

In the economics literature, institutions are typically considered constraints. However, the term "constraint" is a little deceptive, as even the most cited analysis by Douglass North (1990) pays attention to institutions reducing the costs of human interaction by increasing predictability. With changes in rules and e.g. the terms of policy or contracting, the actors need to readjust their behavior, and their interaction. These frictions generated by changes and reduced predictability is captured under the idea of transaction costs (Williamson, 1999).

The analysis of institutions shaping biodiversity policy and use of different instruments(defined below) must necessarily deal with both constraining and enabling institutions. Institutions impose both responsibilities and rights. Institutions can either facilitate or complicate a change in the policy mix, e.g. the introduction of a new policy instrument.

Our analysis focuses on how institutions shape both the design or introduction of a economic policy instrument or an instrument mix targeted at biodiversity conservation, and on how they shape the implementation of a particular economic policy instrument or a mix of instruments. We propose the design and implementation to be considered in both ex post evaluations of established instruments and in ex ante evaluations of instruments that are being prepared or anticipated. The aim is to

Policy Instruments, Policy Mixes and Institutions

The notions of policy instrument, institutions and policy instrument mixes partially overlap conceptually. However, it is useful to make distinctions when the aim is to conduct empirical analysis and focus on certain interactions between these conceptual categories. Furthermore, it is important to note that policy instruments promoting other policy goals than nature conservation and maintenance of ecosystem services are considered institutional context in this project (see WP2 report). Policy instruments are designed through deliberate acts as a reaction to a socially identified problem. They are targeted and formulated to achieve a given goal (e.g. increased conservation of forest biodiversity) through changing behavior of relevant actors. The implementation of a policy instrument produces outputs, like a decision on payments for ecosystem services **(Fig. 1).** The outputs, in turn, generate outcomes. Outcomes come in phases, first immediate and later final. For example after a payment for ecosystem service a landowner restrains himself from logging on a site that can be considered an output of the policy. This affects biodiversity outcomes, which in turn affect the ecosystem services, and the eonomic and social outcomes. In public policy, policy instruments are established by government acts, but also private actors can develop a policy instrument (e.g. a private forest certification or labeling scheme). Like policy instruments, also formal institutions are designed. They differ from policy instruments in that they do not target only a defined set of actions, but also influence and frame behavior in a broader fashion. An example might be a Forest Conservation Act (a law) framing behavior, whereas directives under the act target defined sets of actions. Institutions evolve to encompass the general rules within which policy instruments are developed. Designing formal institutions is motivated by a need to generate enduring rules that would support more targeted policies. Formal institutions are designed to remove undesirable structures and formalize already existing desirable informal customs. The monitoring and enforcement for formal institutions are embedded in the general societal monitoring and enforcement systems. Customs and norms can be considered informal institutions if they are not documented as standards that could be referred to explicitly. Informal institutions are not designed, but emerge through more complex process in practice (e.g. through slow evolution of administrative practices or habits), and their monitoring and enforcement is not specified but embedded for example in social control and disapproval .

The relationship between policy instruments, and institutions as well as broader policy setting is illustrated in figure 1.

The figure captures a very broad understanding of the policy process and the role of institutions and policy instruments in it. In any policy evaluation this should be made more concrete by constructing a case specific intervention theory[1], which involves making explicit "the presuppositions concerning what the intervention was designed to achieve and how this achievement was to come about" (Vedung 1997, 138).

Constructing an intervention theory is a complicated issue, because different actors may have different presuppositions and differ in the ways they see what policy aims to achieve and how. The intervention theory is a vehicle for evaluation, the realism of which is validated or reconsidered during the evaluation.

When analyzing new policy instruments and institutions, it is important to note that all new instruments are embedded in pre-existing, yet evolving formal and informal institutions. The institutional evolution that allows or triggers the introduction of new instruments and their implementation should always be a part of the analysis of policy instruments.
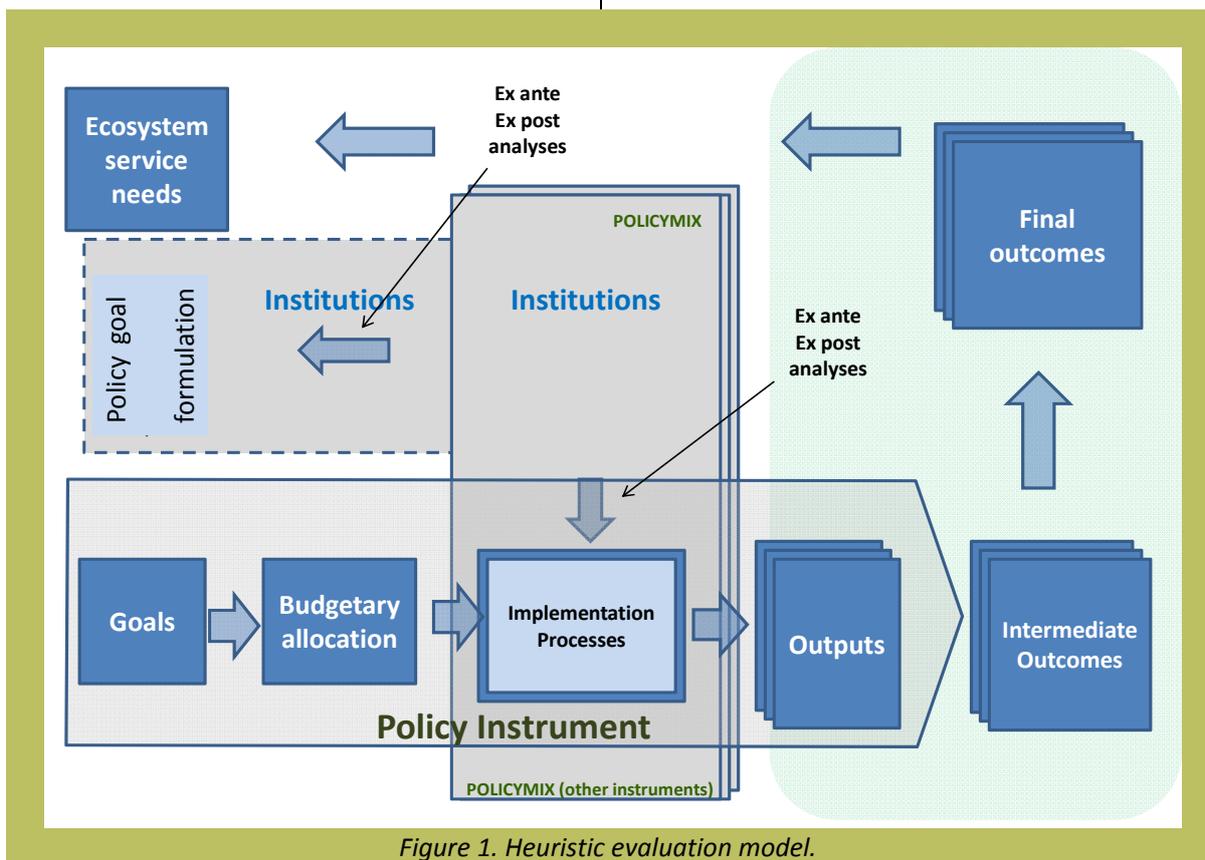

Figure 1. Heuristic evaluation model.

---

[1] Also called as policy theory (Hoogerwerf 1990), program theory (e.g. Chen 1990, Weiss 1997, Rossi et al. 1999, Rogers et al. 2000) program logic (Lenne and Cleland 1987), the program's theory of action (Patton 1997), and theory of change (Pawson 2003) and intervention theory (Vedung 1997).

Research Questions

The case studies should answer the following general questions:

> 1.1 How have existing institutions contributed to the design and implementation of current policy instrument(s) and instrument mixes? (ex post analysis)

> 1.2 How are current institutions and instruments likely to shape the introduction of new instrument(s) and its implementation? (ex ante analysis)

Importantly, prior to the analysis of institutions, all case studies must identify the social-ecological context of the case study (including the biodiversity conservation challenge and its recent development), and identify the instrument(s) that are at the focus of the assessment. The social ecological systems (SES) framework provides a list of higher order variables (see appendix) that have been shown to matter in shaping institutions governing common pool resources, including the governance system that refers to both to the rules that influence behavior and the actors who set, monitor and enhance rules (Ostrom 2007).

How to Analyze Institutions

The description of institutions should support the understanding of the evolution, or sequence of changes in rules that have triggered or at least allowed the new instrument to be designed. In ex ante analysis, these types of changes should be anticipated.

The description should be systematic enough to allow some level of comparison, and ideally, we should actually "measure" institutions and their

influence, i.e. search for empirical evidence of the presence/absence and type of institutions, as well as their influence policy design, and implementation. The starting point is a description of the institution and the mechanisms through which it constrains and enables the use of the policy instruments we are assessing. The case studies should:

2.1 Describe the relevant institution and the mechanisms of influence by which it affects the introduction, design and implementation of the assessed policy instrument(s).

2.2 Provide evidence for your description (reference documents, literature about the institutional setting).

2.3 Collect documents and/or interview or survey data to evaluate the influence and its strength.

What Institutions to Analyze

Before analyzing institutions that influence policy design and implementation, it is crucial to identify the actors that have a role in conserving biodiversity because they have a right to use the natural resource (forest), or to enjoy the ecosystem services it provides or a right to make other decisions that influence its use and protection.

After having identified these actors, the case studies should identify the formal institutions, i.e. arrangements that have been designed on purpose, or evolved spontaneously or incrementally, that define the rights and responsibilities of the actors. Case studies should analyze the mechanism by which these influence the design and implementation of the instrument(s).

Very often, relevant institutions may originate from other sectors, e.g. energy, agriculture and

livestock management or water and tourism and be based on different aims than conservation or sustainable management of forest and non-forest lands. Nevertheless, they may be important factors influencing the way forests are managed. For the purpose of the institutional analysis to be conducted in the case studies, all other policy instruments than those instruments that are the target of our assessment belong to the institutional context, i.e. they can be considered institutions, and should be analyzed if they are relevant for the assessment. Other instruments which can be assumed either to support or constrain the achievement of the goals of biodiversity policy instruments under investigation are relevant. Assumption can come from literature, stakeholders or own theoretical analysis. A typical example would be pervasive agricultural subsidies.

We analyze institutions that influence (constrain or enable) design, and implementation of the assessed policy instruments aimed at biodiversity conservation. These include the rights and responsibilities regarding the use and conservation of forest resources and conservation of forest biodiversity. In addition to direct rights and responsibilities regarding the forest, like property rights, we analyze rights and responsibilities to set conservation and use targets, as well as to monitor and enforce.

Start by describing and analyzing rights and responsibilities. Rights and responsibilities are defined formally in laws or other regulations or somewhat less formally in guidelines and standards, or even less formally in unwritten norms, rules, conventions and customs. Where possible, address also these informal rules and the ways in which rights and responsibilities are perceived, e.g. by defining what is appropriate.

In cases where the case study setting and the rules are not well documented e.g. through previous research, prepare to conduct qualitative analysis. Use documents, interviews and / or focus groups. If your case has been previously studied, and the rules and their influence mechanisms have been analyzed, attempt to conduct more quantitative analysis, e.g. with survey data.

When interpreting and drawing conclusions, pay attention to the behavioral assumptions on which the different institutions rest. Additionally the interpretation should consider rules that influence cooperation and reciprocity, appropriateness of certain behaviors, tendency to not react to changes in market or social demand (path dependency), as well as feasibility, compatibility, transaction costs and legitimacy.

The case studies should:

3.1 Identify, list and describe the **relevant actors and describe their role** in using the resource, enjoying its ecosystem services and making decisions on its use and conservation. Pay attention to actors relevant for both design and implementation.

3.2 Describe all relevant **formal and informal institutions**, i.e. the rights and responsibilities that can be considered to influence the design and implementation of the analyzed policy instrument(s).

3.3 Provide evidence of the **rights and responsibilities** and the mechanisms through which they influence policy design and implementation to the degree it is possible in your case study.

3.3.1.1 For formal rights and responsibilities, refer to official documents

3.3.1.2 For informal institutions, refer to published research or collect interview or survey data

3.4 Evaluate the **influence** that rights and responsibilities and proposed changes in them have had, or could have, **on instrument design** and/or implementation.

3.4.1 Design data collection to measure and evaluate the **influence of institutions** on a particular proposed policy, or **historical policy change**

3.4.2 Analyze the **documents** and possible **interview** or **survey** data

3.4.3 Make **inferences** from the secondary material and own analyses

3.5 Draw conclusions as to the **role of institutions** in constraining and enabling the design and implementation of new policy instruments.

Topics and data sources for analyzing institutions

Identify, list and describe

Actors whose behavior influences BD
1.Those who own, use or have access to the natural resource
2. Those whose livelihood or welfare depends on the resource /nature
3. Those who place demands for conserving the resource /nature or degradation actions
4. Those who decide how the resource / nature is used, managed or protected
5. Public/private sector actors / NGOs
6. Authorities implementing and enforcing policies

Describe **The relevant institutions (the examples below might be only partially relevant for your case study, so consider what is relevant and consult WP6, if necessary)**	**Evidence** of the mechanisms of influence demonstrate how the institution influences policy instrument design, and implementation, e.g. based on formal documents or published research	**Measure and evaluate** the influence, e.g. analyze time series demonstrating recent changes, compare across different actor categories, address directly in interviews or survey (pay attention also to potential lack of desired change)
Example - Description of the right to practice forestry and responsibility to conserve biodiversity: The Finnish land-owner has a right and responsibility to manage forests sustainably, to carry out cuttings to enhance future growth and regenerate after clear-cutting. The land-owner has also the responsibility to maintain biodiversity, and particularly to conserve certain habitat patches. Although recreation and water are free in Finland, providing these services by the land-owner is slowly becoming a point of discussion. Carbon is treated as timber (and tree stumps) currently but new institutions and instruments could emerge to direct its use and sequestering.	Example - evidence for how the forest owner rights and responsibilities influence policy and behavior: The Forest Act states the formal rights and forest management responsibilities. Finland's constitution protects private property but also states that all actors carry a responsibility for clean environment and biodiversity. However, it has been shown that the Forest Act habitat delineation does not protect all patches representing the habitat type (Pykälä, 2007). In addition to the land-owners' rights and responsibilities, their forest management and biodiversity conservation behavior is importantly shaped by the forestry organizations (Siiskonen, 2007) and professionals (Hujala et al., 2007; Primmer and Karppinen, 2010).	Examples – evaluation of changes in land-owner rights and responsibilities due to a policy instrument change (realized or proposed) : - Analyze the recent evolution of land-owner responsibilities, e.g. how their habitat conservation behavior has changed - Interview professionals who provide forest management advice: what are the main duties of a land-owner? How have land-owner responsibilities changed as regards biodiversity conservation? - Make a survey addressing land owners: 1. What are your main duties as a land--owner: a) forest management, b) timber production, c) sustainable use of forests, d) biodiversity conservation, e) provision of benefits (ecosystem services) for the society, f) following the forestry professionals' advice, g) following the environmental administration's advice (fully agree, somewhat agree, neutral, somewhat disagree, fully disagree), 2. What are your main rights as a land-owner: a) Managing the forest as a see best, b) managing the forest as is recommended, c) generating income for myself, d) enjoying all the benefits the forest provides me, e) deciding which areas I manage and which I conserve, f) deciding whose advice I follow in forest management, g) deciding whose advice I follow in conservation(fully agree, somewhat agree, neutral, somewhat disagree, fully disagree)

Describe **The relevant institutions (the examples below might be only partially relevant for your case study, so consider what is relevant and consult WP6, if necessary)**	Evidence **of the mechanisms of influence** **demonstrate how the institution influences policy instrument design, and implementation, e.g. based on formal documents or published research**	Measure and evaluate **the influence, e.g. analyze time series demonstrating recent changes, compare across different actor categories, address directly in interviews or survey** (pay attention also to potential lack of desired change)
Formal institutions: rights		
Right to own land: describe property rights	e.g. law on property rights or constitution, published analyses	e.g. recent changes in rights, formalization of new ecosystem services (e.g. water), differences between land-owner categories
Right to use forest, ES, BD: describe what use rights entail	e.g. law on natural resource extraction, law on forests	e.g. recent changes in rights
Right to access forest: Describe what types of access rights e.g. citizens, neighbors, etc. have	e.g. law or norms on open access	e.g. recent changes in rights
Right to control forest or ES use by other actors: describe the authority of relevant administrative bodies over forest use	e.g. law on forest administration, forest legislation, e.g. control the amount of logging	e.g. recent changes in rights, number of decisions, content of decisions
Right to protect forest: describe the authority of relevant administration to limit forest use and protect areas	e.g. law on environmental administration, nature protection legislation	e.g. recent changes in rights
Right of the owner to have the land protected		e.g. recent changes in the rights
Right to maintain deforested land in agricultural use		
Right to plan land / forest / ES use: describe the authority of planning and forest authorities to make land use and management plans		e.g. recent changes in rights
Consider rights to own, access, use, control, protect other ecosystem services (timber, carbon, recreation, water)		

Describe The relevant institutions (the examples below might be only partially relevant for your case study, so consider what is relevant and consult WP6, if necessary)	Evidence of the mechanisms of influence demonstrate how the institution influences policy instrument design, and implementation, e.g. based on formal documents or published research	Measure and evaluate the influence, e.g. analyze time series demonstrating recent changes, compare across different actor categories, address directly in interviews or survey (pay attention also to potential lack of desired change)
Formal institutions: responsibilities		
Responsibility to protect forests or manage sustainably: describe land-owner responsibilities including, if needed, compliance mechanisms and sanctions	e.g. forest law, formal forest management guidelines that include obligations that can be referred to in control. The Legal Reserve requirement in the Forest Code in Brazil states that private landowners must preserve some parts of their lands. Currently set by presidential decree at 80% for lands in the Amazon, 35% for lands in Cerrado and 20% in other biomes).	e.g. setting aside certain habitat patches or a proportion of managed land, leaving x number of retention trees or x meters of buffer against a watercourse Compliance of Brazilian Forest Code is low due to market pressures for commodities like soy, beef, etc. that end up shaping behavior. (EPRI, 2010)
Responsibility to use forest in a sustainable fashion: describe other users' responsibilities, including, if needed, compliance mechanisms and sanctions		
Responsibility to inform land owners and other actors about management / protection decisions		
Consider responsibilities as re other ecosystem services (timber, carbon, recreation, water)		
(Private institutions)		
Rights and responsibilities defined in certification criteria		
(Transaction costs) (overlaps with WP4)		
Set-up of new administrative structures		Resources spent in restructuring admin.
Information retrieval time		Time/resources spent inventorying
Negotiation time		Time/resources spent negotiating
Monitoring time		Time/resources spent monitoring

Describe The relevant institutions (the examples below might be only partially relevant for your case study, so consider what is relevant and consult WP6, if necessary)	Evidence of the mechanisms of influence demonstrate how the institution influences policy instrument design, and implementation, e.g. based on formal documents or published research	Measure and evaluate the influence, e.g. analyze time series demonstrating recent changes, compare across different actor categories, address directly in interviews or survey (pay attention also to potential lack of desired change)
Informal institutions		
Land-owners' perceived rights and responsibilities	From secondary sources: e.g. Land-owners are not autonomous when making conservation decisions, but rather they rely on professional advice (Hujala et al., 2007; Paloniemi and Tikka, 2008; Primmer and Karppinen, 2010).	Interview: e.g. Who decides what forest management operations will be carried out / benefits (ES) will be produced, what will be conserved, what conservation instruments will be applied? Survey: e.g. To what degree do the different actors influence what forest management operations will be carried out (land-owner, officer from forest admin., officer from environmental admin., timber buyer, forest consultant, forest owner association, ENGO)? -Similar as regards what services will be provided, what will be conserved, conservation instruments will be applied
Information retrieval practices		Interview: How is information collected and used carried? Survey: Where do you receive information about forest management / benefits (ES), conservation from (land-owner, officer from forest admin., officer from environmental admin., timber buyer, forest consultant, forest owner association, ENGO)? How frequently (always, regularly, occasionally, sometimes, never)
Negotiation practices		Time spent negotiating (from first contact to contract) Interview: How are conservation negotiations carried out? Survey: How frequently do different actors participate in negotiations (land-owner, officer from forest admin., officer from environmental admin., timber buyer, forest consultant, forest owner association, ENGO / always, regularly, occasionally, sometimes, never)
Monitoring practices		Time spent negotiating (from first contact to contract) Interview: How are conservation negotiations carried out?

References

Birner, Regina und Wittmer, Heidi 2004. On the "efficient boundaries of the state": The contribution of transaction-costs economics to the analysis of decentralization and devolution in natural resource management. Environment and Planning C: Government and Policy 22 (5): 667-685.

Bromley, D.W. 2004. Reconsidering Environmental Policy: Prescriptive Consequentialism and Volitional Pragmatism. Environmental and Resource Economics 28: 73–99.

Chen, Huey-Tsyh (1990) *Theory Driven Evaluations*. Newbury Park: Sage Publications.

Crawford Sue E. S., Ostrom Elinor 1995. A Grammar of Institutions. The American Political Science Review, Vol. 89, No. 3. pp. 582-600.

EPRI Report. Brazil's Emerging Sectoral Framework for Reducing Emissions from Deforestation and Degradation and the Potential to Deliver Greenhouse Gas Emissions Reductions from Avoided Deforestation in the Amazon's Xingu River Basin. EPRI, Palo Alto, CA: 2010 1021606. 2010

Funtowicz S.0.; Ravetz J.R. 1933. Science for the Post-Normal Age. FUTURES September 1993, 739-755.

Furubotn, Eirik G. und Richter, Rudolf 1991. The New Institutional Economics: A Collection of Articles from the Journal of Institutional and Theoretical Economics. Mohr Siebeck, Tübingen.

Gunderson, L.H., Holling, C.S., (eds.). 2002. Panarchy: Understanding transformations in human and natural systems. Island Press, Washington, DC.

Gunderson, L.H., Holling, C.S., (eds.). 2002. Panarchy: Understanding transformations in human and natural systems. Island Press, Washington, DC.

Holling C. S. 2001. Understanding the Complexity of Economic, Ecological, and Social Systems. Ecosystems, 4: 390–405.

Hoogerwerf, Andries (1990) 'Reconstructing policy theory'. *Evaluation and Program Planning* 13 (3): 285-291.

Jordan, A., Wurzel, R.K.W. and Zito, A.R. 2003. 'New' Instruments of Environmental Governance: Patterns and Pathways of Change, Environmental Politics, 12: 1, 1-24.

Lenne, B. and Cleland, H. (1987) 'Describing program logic'. *Program Evaluation Bulletin 2*.

North Douglass C. 1990. Institutions, Institutional Change and Economic Performance. Cambridge University Press. 152 p.

North, Douglass C. 1991. Institutions. The Journal of Economic Perspectives 5 (1): 97-112.

Ostrom, E. 1990. Governing the commons: The evolution of institutions for collective action.Cmbridge University Press. Cambridge. 280 p.

Ostrom, E. 2007. A diagnostic approach for going beyond panaceas. PNAS, September 25 2007, 104(39): 15181-15187.

Ostrom, E. 2005. Understanding institutional diversity. Princeton University Press. Princeton, New Jersey.

Paavola, J. 2007. Institutions and environmental governance: A reconceptualization. Ecological Economics, 63, 93–103.

Paloniemi, R. Tikka, P.M. 2008. Ecological and social aspects of biodiversity conservation on private lands. Environmental Science and Policy 336-346.

Pawson, Ray (2003) 'Nothing as practical as a good theory'. *Evaluation* 9(4): 471-490.

Patton, Michael Quinn (1997) *Utilization-focused evaluation. The new century text*. 3rd ed. Thousand Oaks: Sage.

Pearce, D.W. and Moran, D., 1994. The Economic Value of Biodiversity, Earthscan, London.

Primmer E. 2010 Policy, project and operational networks: channels and conduits for learning in forest biodiversity conservation. Forest Policy and Economics, In Press.

Primmer, E., Karppinen, H. 2010. Professional judgment in non-industrial private forestry: Forester attitudes and social norms influencing biodiversity conservation, Forest Policy and Economics, 12:2, 136-146.

Primmer, E., and S. A. Wolf. 2009. Empirical accounting of adaptation to environmental change: organizational competencies and biodiversity conservation in Finnish forest management. Ecology and Society 14(2): 27. [online] URL:

http://www.ecologyandsociety.org/vol14/iss2/art27/.

Rogers, Patricia J. and Petrosino, Anthony and Huebner, Tracy A. and Hasci, Timothy A. (2000) 'Program theory evaluation: practice, promise, and problems'. *New Directions for Evaluation* 2002(87): 5-13.

Rossi, Peter H. and Freeman, Howard, E. and Lipsey, Mark W. (1999) *Evaluation. A systematic approach. 6th ed.* Thousand Oaks: Sage.

Scott R.W. 2001. Institutions and Organizations. 2nd Edition. Sage Publications, Thousand Oaks, 255.

Vatn, A. 2005. Rationality, institutions and environmental policy. Ecological Economics. 55, 203– 217.

Vatn, A. 2009. An institutional analysis of methods for environmental appraisal. Ecological Economics, 68, 2207–2215.

Vedung, Evert (1997) *Public policy and program evaluation*. New Brunswick: Transaction Publishers.

Wätzold, Frank; Mewes, Melanie; van Apeldoorn, Rob; Varjopuro, Riku; Chmielewski, Tadeusz Jan; Veeneklaas, Frank und Kosola, Marja-Leena 2010. Cost-effectiveness of managing Natura 2000 sites: an exploratory study for Finland, Germany, the Netherlands and Poland. Biodiversity and Conservation 19 (7): 2053-2069. http://www.ingentaconnect.com/content/klu/bioc/2010/00000019/00000007/00009825

Weiss, Carol H. (1997) 'How can theory-based evaluation make a greater headway?'. *Evaluation Review* 21(4): 501-524.

Williamson Oliver E 2001. The Theory of the Firm as Governance Structure: From Choice to Contract. Journal of Economic Perspectives 16 (3): 171–195.

Williamson, Oliver E. 1999. Public and private bureaucracies: a transaction cost economics perspective. Journal of Law, Economics and Organization 15 (1): 306-342.

Wunder , S. 2007. Efficiency of Payments for Environmental Services. Conservation Biology. 21:1, 48-58.

Young, Oran R. 2001. The Behavioral Effects of Environmental Regimes: Collective-Action vs. Social-Practice Models. International Environmental Agreements: Politics, Law and Economics 1: 9–29, 2001