INNOVATION IN GOVERNANCE

The emergence, development and expansion of new forms of governance: comparative case studies on tradable permit schemes and deliberative procedures

Research Programme of the Innovation in Governance Research Group
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Abstract

The group examines the development of new forms of governance in the context of social-ecological transformation processes, by implementing case studies on policy instruments from two different instrument “families”, namely tradable permit schemes (such as emissions trading, tradable fishery quotas, biodiversity credits) and deliberative procedures (such as citizens’ juries, consensus conferences, scenario workshops).

Policy instruments from these families are often discussed as a possible solution for the challengeof sustainable development. In practice, however, implementing these instruments often causes further difficulties when they interact with existing policy structures. With this in mind, the group investigates the emergence, development and expansion of policy instruments as an innovation process, which is shaped through social-ecological contexts in various fields of application. How do new policy instruments emerge? And how do they interact in their development with existing governance structures and social-ecological transformation processes? Alongside theory-based and empirical research, a transdisciplinary methodology will be tested in order to develop scenarios of possible future pathways of innovations in governance.

Problem

Sustainable development and new forms of governance

Sustainable development necessitates new forms of governance. Studies on the linked dynamics of society and nature come to the conclusion that public policy, and governance more broadly, is not only the recipient of proposed solutions, but actually forms part of the problem itself (Norgaard, 1994; Lee, 1994; Pritchard et al. 1998; Minsch et al., 1998; Brand, 2002; Gunderson, Holling, 2002; Lafferty, 2004; Smith et al. 2005; Olsson et al. 2006). Consequently, the search for pathways of sustainable development is linked to the search for new forms of governance. In practice, experiments which modify existing policy patterns have been observed (e.g. environmental taxes, participative planning, policy integration, regulatory impact analysis, sustainability strategies and reports), as have more radical designs for governance forms, which transcend the linear control approach of conventional public policy (adaptive management, transition management, real-world experiments). The latter reveals a search for governance forms that are able to cope with ambivalent goals, uncertain knowledge and distributed power (Voß, Kemp, 2006; Voß et al. 2007).

Innovation in governance as a research problem

Practical experience has shown that new forms of governance (similar to new products, technologies, organisation forms) cannot just be applied without further consideration. Tests and trials are required in order to make new approaches fit for practice. They need to be integrated into existing paradigms and institutions. Often, further adjustments in the field of application are necessary, such as coordination with other political measures and established administrative procedures, or the setting up of information and monitoring systems.

The further new forms of governance deviate from existing ones, the profounder the transition needed. This can, however, go hand in hand with the devaluation of expert knowledge and the loss of attractive positions for some actors. The implementation of new forms of governance is thus connected with power struggles between various actor coalitions from political parties, administration, consultancy and service organisations, research and interest groups, who can increase their influence as supporters of new forms of governance, or are unwilling to forego their privileges as incumbents, respectively (see for example Derthick, Quirk, 1985; March, Olsen, 1989; Jenkins-Smith, Sabatier, 1993; Djelic, Quack 2007; Kern, Smith 2008). International research has begun to place increasing importance on this particular aspect of “governance of sustainable development”: How viable are current alternative designs (Voß, 2000), or how do new forms of governance emerge and establish themselves within the context of existing governance structures?

It is here that the research group intends to take up its work. It addresses the problem of introducing new forms of governance for sustainable development and takes it as a starting point to develop a research programme which focuses on innovations in governance. This is to tackle fundamental issues before the development of strategies for the introduction and shaping of new forms

of governance can begin. The concept of innovation enables the observation of how new forms of governance are established in long-term processes which are typically characterised by a tension between design, models, and strategic planning on the one hand, and resistant contexts, ongoing dynamics, and unintended consequences on the other. Innovation retrains the perspective away from goal definition and policy choice towards the process in which alternative design options are constructed, take shape and come to be conceived as new forms of political practice.[1]

The emergence and development of policy instruments

The development of new forms of governance represents a research topic which, compared with conventional political science approaches, implies a change in perspective. Looking at political change usually means defining a political system (municipality, nation state, European Union) or a thematically defined policy field (climate protection, research policy or development aid) as the unit of analysis (see Polsby, 1984; Majone 1992; Howlett 1992; Sabatier, 1993; Hall 1993; Baumgartner, Jones, 1993; Kingdon, 2003/1995; Pierson 2000; Thelen, 2002). However, the emergence, development and expansion of new forms of governance usually transverses political systems and issue areas.

We therefore link up with research on policy instruments. This research perspective puts a variety of different forms of public policy at the centre of analysis(e.g. taxes and subsidies, technical standards, information campaigns, establishment of regulatory agencies), which are then sorted and classified with respect to performance profiles and prerequisites of operation in order to advise policy makers on how to design their policies (Dahl, Lindblom, 1953; Hood, 1983; Woodside 1986; Bressers, Klok 1988; Peters, van Nispen, 1998; Eliadis et al., 2005; Lascoumes, LeGalès 2007). As the research field continued to develop, the politics of policy design and implementation became a topicwhich shifted the focus of research towards explanations for why instruments are not delployed “rationally”, i.e. according to the recommendation of analysts (Howlett 1991; Dolowitz, Marsh 1996; Bressers, 1998; Tews et al. 2003; Smith 2004; Howlett 2004; Jordan et al. 2005).

Our investigation into innovation in governance adopts a focus on policy instruments, we do not look into issues of functionality and choice, however, but into the processes by which the instruments themselves come into being and develop. We assume that policy instruments are not generically given, but constructed in social interaction processes. In this respect, we regard policy instruments not as given tools, that are selected and applied, but as forms of governance, which emerge through their articulation, theorisation, translation, probing, embedding, and evaluation, and are subject to constant change. They portray rationalised representations of specific forms of political practice, which consistently develop in interaction with this practice and the contexts in which it is embedded. A view on the emergence, development and expansion of policy instruments

[1] The term innovation is used descriptively and analytically here, and not in a normative sense. Briefly speaking, innovation stands for novelty and not improvement. Innovations are successful when they replace, superpose or dominate exisiting forms. They do not need to be normatively desirable or functional in respect of specific political aims. This proposal’s concept of innovation in governance is therefore indifferent with regard to sustainable development. It is first of all important to understand how and why specific governance forms can in specific contexts gain a foothold, develop and expand. Only during a second step is it possible to ask the question of what lessons can be learned for innovation strategies for sustainable development.

leads us above and beyond individual fields of application towards the transnational sphere, where prototypes for policy action and institutional design are developed, designed, compared, negotiated and evaluated (Haas 1989; Boli, Thomas, 1999; Braithwaite, Drahos, 2000; Marcussen 2001; Stone 2004; Eberlein, Grande 2005; Djelic, Sahlin-Andersson, 2006; Zürn, 2006; Quack 2007; Mahon, McBride 2009). From this perspective, the historical development of of policy instruments appears as a journey that may lead across a number of different fields of application (see Figure 1).

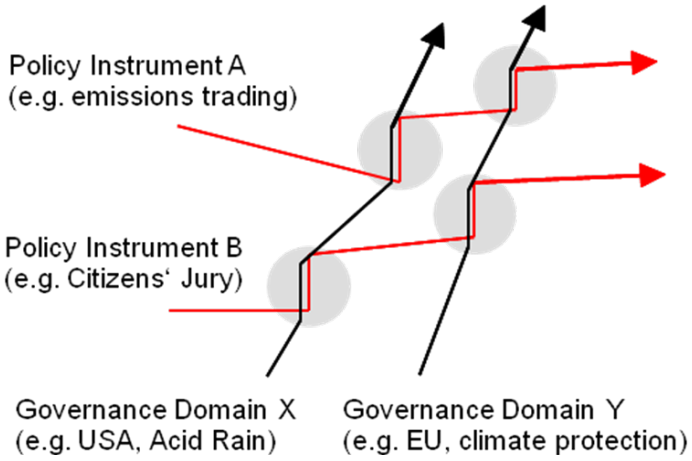

Figure 1 Innovation processes of policy instruments as the unit of analysis

Objective

The overarching aim of the research group is to establish a research approach for investigateng the emergence, development and expansion of new forms of governance. To this end, empirical investigations will focus the development of policy instruments from two different families: Tradable permit schemes (e.g. emissions trading, biodiversity credits) and deliberative procedures (e.g. cizitens' juries and scenario workshops). The group's work is guided by the following research questions:

- How do new forms of governance emerge? How do they develop and expand?
- How do new forms of governance interact with existing governance structures?
- How to innovations in governance interact with social-ecological transformation processes?
- How can innovation processes in governance be anticipated and shaped?

Three closely-related sub-aims define the scope of the project: (1.) The development of a theoretically founded process model on innovations in governance, (2.) The empirical reconstruction of innovation processes and (3.) Transdisciplinary strategy development for the design of innovations in governance.

Developing a process model for innovation in governance

By way of dedveloping a process model on the innovation of policy instruments we aim at a theoretical conception of the dynamics of innovation in governance interacting with existing governance structures and social-ecological transformation processes. To achieve this, the following components will be developed:

- Typical process pattern of innovations in governance (e.g. sources, phases, tracks)
- Dynamic mechanisms in the innovation process (e.g. network building, visions and expectations, positive and negative feedback with context, expansion and diffusion mechanisms, competition between co-existing innovation processes)
- Relationship between the development of policy instruments with broader political discourse (e.g. ideologies, world views, beliefs)
- Interaction of innovative forms of governance with existing governance structures (e.g. policy style, problem solving paradigm, administrative structures, quality standards)
- Interaction of innovation processes in governance with social-ecological transformation (e.g. reference to technical and ecological problems s, technical-economical and geographic-ecological context conditions)

Studying tradable permit schemes and deliberative procedures

A second sub-aim is the empirical reconstruction of innovation processes in case studies on the historical development of selected policy instruments. To this end, a omparative case studies on innovation processes from two different families of policy instruments will be carried out. Common to both families is the fact that they have in recent decades (especially in connect with sustainable development issues) expanded in those areas, where previously classic forms of direct regulation prevailed:

- Tradable permit schemes: Tradable permit schemes depict a family of policy instruments that are based on the issuing of private permits with regard to environmental pollution or the use of common resources, as well as to establish markets in which they are traded. In this way, the market mechanism is used to regulate non-sustainable behaviour in a cost-effective manner.
- Deliberative procedures: This family of policy instruments encompasses procedures to initiate and structure discussion among actors with with different perspectives to deliberate public problems and possible solutions. In this respect, the mechanism of rational argumentation is used to facilitate integrated treatment of sustainability issues.

Developing future scenarios

The third sub-goal of the research project is to constructively engage with ongoing innovation processes in governance. To implement this, interim results from conceptional and empirical work will be transformed into a foresight method. This method will then be used to support actors whoe are involved with innovation processes in governance by enabling them to develop scenarios for possible future innovation paths. By developing these future scenarios, interdependencies, context

dynamics and unintended cosnsequences of design strategies can be systematically reflected, thereby allowing the actors to develop more robust design strategies. At the same time, interacting with actors from the field will allow the project to probe its interim results ("reality check").

Research design

The research design first provides for the development of a process model of innovation in governance which can serve as a heuristics for the structuring of empirical case studies. Over the course of the empirical research phase and in interaction with actors from the field, the process model will be probed and successively modified and refined. In this section conceptual development, empirical investigation and transdisciplinary scenario development are each portrayed as a separate research approach. In carrying out the research, however, they are tightly coupled.

Conceptual framework

For studying the emergence, development and spread of new forms of governance, policy instruments are conceptualised as *technologies of governance*. In this way, concepts from social studies of innovation and technology can be mobilized to analyse innovation in governance. The PhD thesis of the Group's head analysed the development of two exemplary policy instruments by means of the innovation journey concept t borrowed from innovation studies (Voß, 2007). The concept describes the development of policy instruments as a path of successive events, during which forms of governance emerge, become enshrined in practice, stabilise and spread to further fields of application. During this process, theoretical articulation and practical implementation of policy instruments are closely interconnected. For our research we need to develop the theoretical foundations of applying the innovation journey concept to new forms of governance, and we need to further specify it and embed it in a more comprehensive analytical framework which is better able to capture interactions with broader dynamics of governance and social-ecological transformation. We plan to organize our conceptual workin the following three areas.

Policy instruments as technologies of governance

The first conceptual strand aims at the theoretical consolidation of a concept of policy instruments as technologies of governance. To this end, a concept on "technology" will be developed, which points beyond material artefacts and infrastructure systems (cf. Rammert, 2007). Based on the Greek roots "techné" and "logia," a general concept of technology as "science of practical transformation" will be outlined. A second step will see a further specification of this concept with regard to technologies of governance. In a third step, relations to central metaphors and terms from political science will be elaborated (e.g. "policy tools", "modes of governance", "institutional design"). From here, a concept on policy instruments as technologies of governance will be developed.[2] In a

[2] Technologies of governance can be understood in an abstract sense as the "sciences of governing practice". Such understanding can be related back to a number of pioneers, who refer to the term, albeit in the context of specific broader frameworks which may not apply here (Ellul, 1964/1954; Habermas, Luhmann, 1971; Foucault, 2005/1994; Shore, Wright, 1997; Bunge, 1998; Salamon, 2002a). With regard the field of science and technology studies (STS), technologies of governance are understood to have a soical life ,

fourth step, a conceptual framework on the development of policy instruments will be presented, combining elements from the fields of innovation and technology development with elements from policy, governance and organization studies. Paramount to this are the mechanisms of social construction, the role of power and controversy and the contextual embedding of technological developments, as well as the social organisation and momentum of technological knowledge. In the process of developing this concept, the following theoretical questions will be:

- What is the stuff that policy instruments are made of? Are they ideas (Czarniawska, Joerges, 1996), models (Braithwaite, Drahos 2000), practices (Giddens, 1986/1984), institutions (Lascoumes, LeGalès 2007) or socio-technical configurations (Rip, Kemp, 1998)?
- How is it possible to explain the paradox of policy instruments being increasingly effective in structuring political debate, while at the same time evidence amounts to the perception that defined functions and promised effects of policy instruments cannot be sustained in political practice (van Nispen, Ringeling, 1998)?
- How can the relation between design (articulation of principles and models, stadardisation, evaluation) and dynamics (diverging interpretations, conflicts, power struggles, emergent patterns and unexpected effects) in the process of innovation in governance be understood (Mill, 1862; Czada, Schimank, 2000; Olsen 1997; Olsen 2009; Voß, 2007)?

Innovation journeys of policy instruments in a multi-level context

A second conceptual strand of work aims at specifying the innovation journey concept and embedding it in a model of a multi-level context.

The innovation journey concept describes the development of new policy instruments as a gradual process of articulation, stabilisation and embedding, during which models of governance and really existing patterns of governance mutually adapt.[3] Key questions with regard to specifying the innovation journey concept are:

- Agency: Who drives and shapes innovation processes in governance? Which actors are influential in different phases of the innovation process?
- Constituency: How do constituencies for particular policy instruments emerge, change shape, incorporate new actors and exclude others? How are instrument constituencies structured? What kind of institutionalisation processes can be observed and to what effect?

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i.e. be constituted vy interactionsfrom which relevant knowledge emerges, by actors networks and institutions which develop, create, implement and evaluate policy instruments, as well as the political controversies and power struggles connected to the enforcement of specific design standards and the introduction of technologies into society (Latour, Woolgar, 1979; Rammert, 1983; Bijker et al., 1987; Williams, Edge 1996; Weyer et al., 1997; Simonis et al., 2000; Bijker, Law, 2000).

[3] Building on Rip and Schot (2001) we distinguish typical phases of an innovation journey of policy instruments (Voß, 2007):

1. Gestation: opportunities or problems offer opportunities for technological promises
2. Proof of principle: resources can be mobilised and a protected space of experimention be created to carry out first developments which may establish the proof that basic functionalities can be achieved
3. Prototyping: establishment of working arrangements in the context of real world politics, where debugging and trouble shooting takes place and further adjustments are made in a mode of learning by doing, now in interaction with users and societal stakeholders
4. Regime formation: objectification of prototypical practices by articulating universal design principles, translation to further contexts of application, learning across different sites of implementation, formation and institutionalization of a global constituency of the instrument, attempts at standard setting and further expansion of the scope of the instruments

- Conflict and power: How conflicting perspectives and interests processed, how are controversies resolved, how does power become effective in innovation processes?
- Continuity of the innovation process: How are different steps in the development process of a policy instrument connected to one another? By what are they linked up with each other: Ideas/discourse, intermediaries/practitioners, actors/networks or rules/institutions? What gives continuity of an innovation as it undergoes change?
- Process patterns: What are typical courses of innovation journeys in governance? Is it possible to distinguish typical phases?
- Mechanisms: Which mechanisms explain the dynamics, the shape, the course and success of innovation journeys? How do endogenous and exogenous factors interact?

Alongside the theoretical consolidation, the innovation journey concept will be complemented by embedding it in a model of a multi-level context with which innovation journeys interact. This will allow the integration of established norms and standards of policy design (policy design regime) and broader political discourses featuring particular issues, values and world views (political landscape).[4]

- Policy design regime: policy practices are linked with special knowledge and skills, paradigms, administrative routines, special organisations and institutional infrastructures which frame quality criteria and "best practices" for new policy designs. As such, they operate *de facto* as a setting of rules, a regime, for the design of new forms of governance. New approaches need to be able to prove that it is worth departing from established standards and they must overcome the resistance of those actors, who would need to retrain or who could lose the positions they occupy under the established regime.
- Political landscape: the development of new policy instruments is, like existing policy regimes, embedded in a broader setting of political discourses, which feature particular issues as well as general political aims, values, norms and corresponding problem definitions. Policy instruments and regimes need to prove their legitimacy in the context of this broader setting of discourses.

With this integrative perspective of policy design regimes and political landscape, exogenous influences can be systematically considered when studying the course of innovation journeys (cf. "selection environment" in evolutionary theories of innovation). This leads us to formulate specific research questions for our empirical study:

- Which existing policy design regimes and political landscape conditions are of relevance for the development of tradable permit schemes and deliberative procedures?

[4] Overarching political discourse on neo-liberal state reform, for example, plays a key role in the development of emissions trading and network access regulation as policy instruments (Voß, 2007). The direction of infleunce is, however, not one-sided. Political discourse not only influences the development of specific policy instruments, but is also infleunced by the development of policy instruments, if they offer operationalised policy approaches that demonstrate the feasibility of putting overarching ideational frameworks in practice.

- How do processes at the levels of innovation journeys, policy design regimes and political landscape interact, how do they link up with each other, and which typical dynamics arise as a result?
- How do such processes relate with established notions of multi-level governance which are based on levels of political administration?

Figure 2 illustrates the applied multi-level model, based on the example of emissions trading. Innovation processes are analysed as the result of interactions between processes on the various levels.[5]

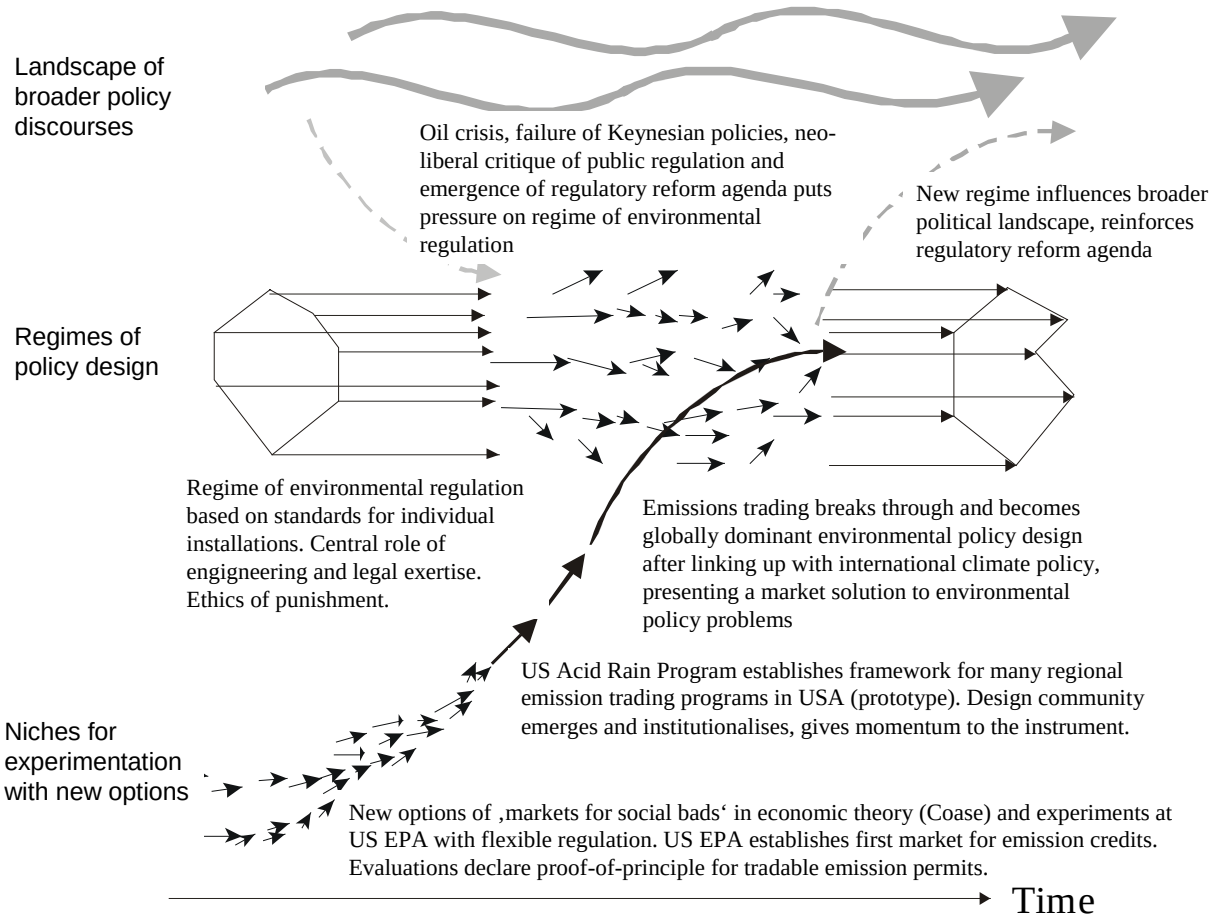

Figure 2 Innovation journey of emissions trading in the multi-level model (Diagram adapted from Geels 2002)

Co-evolution of policy instruments with governance domains

A third conceptual strand aims at analytically capturing the interaction of innovation journeys of policy instruments with patterns and dynamics in particular contexts of application. In a first step, we will explore in how far concepts of governance (or policy) domains (Schubert, Bandelow, 2003) are able to capture the context within which policy instruments are applied and through which they

[5] The figure is an adapted version of a multi-level perspective on processes of technological change (e.g transition from sailing boat to steamer or from a horse-drawn carriage to the car) (Rip, Kemp, 1998; Geels 2002; Geels, Schot 2007). The representation for emissions trading is based on (Voß 2007).

are shaped. A special challenge is to define the relevant context of implementation for policy instruments

, not only on the basis of political rhetoric or formal administrative responsibilities, but to attempt to mark them off using empirically identifiable spheres of political practice. We aim at an approach which defines the implementation context of policy instruments as an overlapping of various structural dimensions.[6] These dimensions could be:

- Actors: density of interactions (e.g. policy networks)
- Formal institutions: administratively defined areas of authority (e.g. jurisdictions, departmental competences)
- Informal institutions: political cultures (e.g. advocacy coalitions)
- Discursive linkages: problem framing (e.g. problems constructed in public debate)
- Economic exchange relations: markets (e.g. industries, sectors)
- Large technical systems (e.g. transport or electricity networks)
- Geographical landscape: natural spaces (e.g. waters, mountains, weather divides)
- Ecosystems: ecological interdependencies (e.g. habitats, biospheres)

Building on this, the point is to understand how these dimensions interact. in constituting particular contexts of governance In order to comprehend particular patterns and dynamics of governance in such contexts, we link concepts on policy change (Hall 1993; Sabatier, Jenkins-Smith, 1993; Thelen, 2002; Pierson, 2004; Schmidt, Radaelli 2004; Black et al., 2005; Grin, Loeber, 2007) with concepts on socio-technical change (Hughes, 1987; Rip, Kemp, 1998; Bijker, Law, 2000; Geels, 2005; Berkhout et al., 2004; Geels, Schot 2007) and social-ecological transformation (Norgaard, 1994; Hanna et al., 1996; Becker, Jahn, 2000; Gunderson, Holling, 2002). Historical studies on the developmental dynamics in particular contexts of implementation will then form a basis to analyse the co-evolution with innovation journeys of policy instruments when they enter those contexts.

Empirical study

The focus of our empirical investigation lies in the historical reconstruction of the innovation journeys of selected policy instruments. The reconstruction will be complemented by historical studies on the development of governance patterns in contexts of application (see Figure 3). What particularly interests us is how the innovation journeys of policy instruments are shaped as they pass through specific contexts of application as well as how they, in turn, influence the development of governance patterns in these contexts.[7] For each "family" of policy instruments – i.e. tradable permit schemes and deliberative procedures – we will implement two comparative case studies (Yin, 2003; Flybjerg 2001) on the innovation journey of policy instruments (according to current

[6] "Climate protection in the EU" as a context of application for the policy instrument "emissions trading" can, for example, be ascertained by the following analyses: who is integrated into networks of policy formulation? Which areas of formal authority are affected? Which political values and ideologies are touched upon? How is the issue defined in public debate? Which economic sectors are affacted? Which technical infrastructures need to be taken into consideration? Which ecological system boundaries play a role?

[7] Compare with a similar perspective on the co-evolution of technological developments with the industrial sectors in which the technology is applied (Tushman, Rosenkopf, 1994). With respect to current strands in governance research this relates to a view on the interlaced dynamics of transnational regulation processes and national policy fields (Djelic, Quack 2007).

plans on emissions trading, bio-diversity certificates, citizens' jury and scenario workshop), as well as two case studies on the historical development of governance patterns in selected contexts of implementation (planned are climate protection and nature conservation in the EU, USA, and Chile).

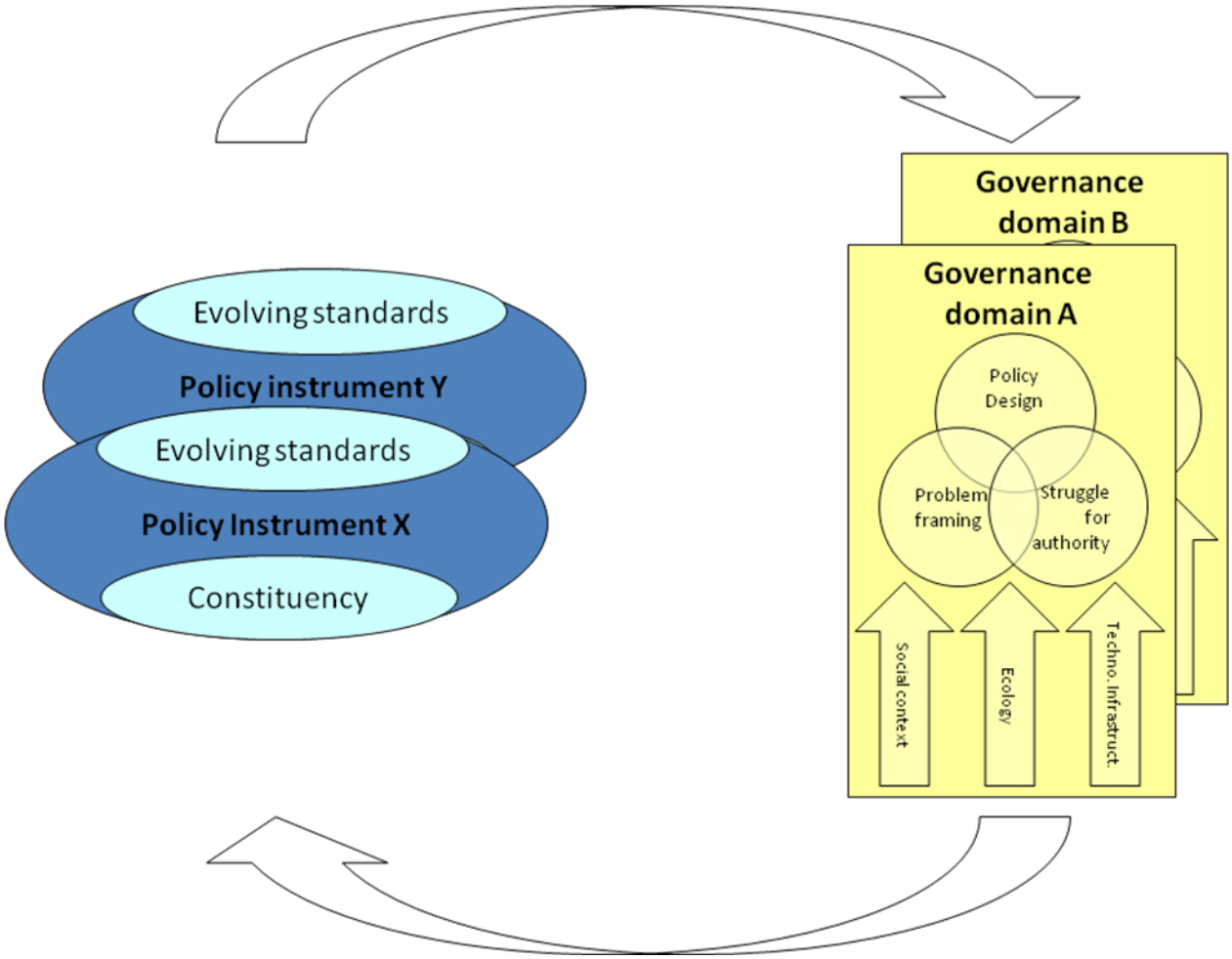

Figure 3 Case studies on the innovation journeys of policy instruments, complemented by case studies domain dynamics

Comparative case studies on innovation journeys of policy instruments

Innovation journey case studies concentrate on the reconstruction of the historical process through which policy instruments come into being and spread across domains. These case studies are structured in line with the heuristic process model and the thus devolved expectations via process patterns.

Case selection

By selecting tradable permit schemes and deliberative procedures, we will be looking at two different instrument families. Whilst the tradable permits family is concerned with realising the theoretical potential of the perfect market (e.g. Coase 1960; OECD 1997), the deliberative procedures family aims at fulfilling the theoretical potential of a domination-free discourse (e.g. Habermas, 1987; Gastil, Levine, 2005). The following table compares both families.

	Tradable permits	Deliberative procedure
Scientific background	Economics	Communication theory
Action model	Given preferences are maximised through rational action	Problem frames and interests are scrutinised and changed via processes of communication
Form of interaction	Exchange	Communication
Mechanism of coordination	Invisible hand, market price	Argumentation, agreement
Ideal	Perfect market	Domination-free discourse
Design parameters	Decision on protection goal, issuing of permits for private use of common ressources, establishment of a market for the trading of permits	Definition of a subject of deliberation, selection of participants, establishment of a discussion process, creation of a setting suitable for rational argumentation
Promised function	Efficient allocation of protection measures, innovation incentives	Integrated problem solving, political empowerment and legitimisation of policy decisions, civic education
Application fields	Protection or provision of common goods	Problem structuring, policy development and evaluation
Embedding in broader discourses	Deregulation, privatisation, regulatory reform, flexible regulation, efficiency, ecological modernisation	Deliberative democracy, civil society, public sphere, participation, justice, good governance
Constituency	Economists, financial service providers, consulting firms, law firms, project developers, certifiers, energy industry ("carbon industry")	Civil rights movement, moderation and mediation service provider, designers of organised dialogue processes, consulting firms, event managers

In recent years, both instrument families have, in some fields ousted classical governance forms of representative decision and direct regulation (Gunningham, Sinclair, 2002; Grote, Gbikpi, 2002; Salamon, 2002b; Djelic, Sahlin-Andersson, 2006). They thus play an important role for the change from government to governance, as well as the transformation of the state (Rhodes 1996; Leibfried, Zürn, 2006; Folke-Schuppert 2008). Also with regard to the challenges of sustainable development, both policy instrument forms are dealt with prominently (OECD, 2001). Another common feature is the fact that both instrument families are catered for by professional networks of consultants and service providers, where specialist knowledge, professional roles and new forms of organisation evolve. By viewing policy instruments as technologies of governance, it is possible to talk of the emergence of a sector which specialises on the development, creation and maintenance of the respective technology and advances its use and standardisation.[8] Despite these similarities, the sectors show differences in the extent to which they are integrated by a shared design paradigm and patterns of organisation. In the case of tradable permits, economic theory acts as an explicit and shared theoretical basis. For deliberative procedures, development takes place either without explicit references to theory, or it draws on a heterogeneous set of elements from different theories (Fischer, 2009, ch. 3). Accordingly, the purpose of tradable permits is clearly articulated as to increase efficiency in the regulation of common goods, whereas deliberative procedures are said to serve a variety of purposes, such as integrated problem solving, legitimisation of political decisions, citizen participation and democratic education.

Methodological challenges

The historical reconstruction of innovation processes is associated with general methodological challenges facing process analysis (e.g. a changing research topic over the course of time) (Baur,

[8] Emissions trading for greenhouse gases has, for example, led to the formation of the so-called 'carbon industry' (Voß 2007; Müller 2007). The industry is, in the meatime, organised in a series of individual associations (see, for example, International Emissions Trading Association, www.ieta.org). In the deliberative procedures field, a substantial portion of methods are in the meantime registered trademarks (Gastil, Levine, 2005). Since the mid-1990s, specialised consultancies have been set up (In Germany these include, for example, IFOK, www.ifok.de, Dialogik GmbH, www.dialogik-expert.de, Nexus, www.nexus-berlin.com).

2005). Furthermore, specific challenges come to the fore, such as comprehending the "double life" of policy instruments as theoretical models, on the one hand, and contextualised governance practice on the other. Together with our theoretical research, adequate methodological approaches will be developed.

Three-fold "zoom"

The empirical investigation will be implemented in three steps, each of which will consider a smaller section of the research topic, but in greater detail.

1. Family tree: The first step focuses on a broad, explorative study on the historical development of the entire instrument families: tradable permits and deliberative procedures respectively. Work will focus on the elaboration of a family tree with all its varying branches. This will enable us to capture the temporal, spatial and functional distribution of the design varieties within both families. This is the starting point for the development of a taxonomy as well as for the establishment of hypotheses on how instruments of one family are related to one another and where they originate.
2. Innovation journeys: Two branches from each family tree will be singled out, allowing the development of the selected branches to be analysed in more detail. The focus here is on the innovation journeys of individual policy instruments. A specific challenge consists in not just considering retrospectively successful developments, but also aspects which were controversial and politically contested, as well as parallel development programmes, some of which later turned out to be an impasse. A final choice of cases will be made in course of further developing the research programme on the basis of reports on the family trees. A provisial selection of cases includes:
    - *Emission trading:* Tradable permits for the emission of air pollutants developed during the 1970s within the context of policies on air pollution control in the USA (Cook, 1988). They were subsequently developed further in the fight against "acid rain" (Project 88, 1988; Ellerman et al., 2000) and enshrined in the 1997 Kyoto Protocol as an instrument for the reduction of greenhouse gases (Damro, Luaces Méndez 2003). In 2005, the European Commission converted the instrument into a pan-European system for the trading of emissions rights for greenhose gases (Handjürgens, 2005; Voß, 2007; Skjaerseth, Wettestad, 2008). Currently, developments for the establishment of regional greenhouse gas emissions markets in various parts of the world are in full swing – as is their connection to a global system for tradable greenhouse gas permits.
    - *Biodiversity certificates:* One type of tradable permit scheme which has received increased attention in recent years are tradable certificates for nature and species conservation (Carroll et al., 2008). In 1990s USA, "conservation banking" for the financing of protected reservations via certificates developed, with which encroachments on the Endangered Species Act could be compensated. Precursers to this concept are trade-off measures contained in the 1972 Water Pollution Control Act (Mead, 2008). Australia has been introducing "biodi-

versity credits" since 2006 (Shields, 2008). In the EU, discussions are currently taking place with regard to introducing the instrument in connection with the implementation of the directive on environmental liability (Bio Intelligence Service, 2008; COM (2007)140 final). In developing countries, discussion surrounding certified deliverables for "Reduced Emissions from Deforestration and Degredation (REDD)" has revealed a particular connection to emissions trading in environmental protection.

- *Citizens' jury/Planungszelle:* One of the most well-known and widespread instruments from the deliberative procedures family is the citizens' jury (Smith, Wales 2002; Leyenaar, 2008). The citizens' jury is a formalised process, in which a group of lay people chosen at random assesses, with the support of expert consultations, a predefined political challenge. The instrument was developed in the USA and Germany at the same time in the 1970s but under two different names (Crosby 1975; Dienel, 1978). The breakthrough came in the 1990s, when both strands were merged in the UK (Coote, Menaghan, 1997). Since then, the instrument has continued to expand (amongst others towards Denmark, Spain, Australia, India and Japan) (Dryzek, Tucker, 2008; Soneryd 2008; Bryant, 2009). In August 2007, UK Prime Minister Gordon Brown announced "a new type of politics", in which citizens juries would play a key role.[9]
- *Scenario workshop:* This deliberative procedure incorporates various stakeholders into the discussion of alternative future development paths, which are presented in the form of future scenarios. The instrument was developed at the beginning of the 1990s by the Danish Board of Technology and used for the first time in 1993 to discuss the future of ecological building and living (Soneryd 2008). During the development of the procedure, the concept of "future workshops", as developed in Austria by Robert Jungk and Norbert Müllert since the 1950s, served as a prototype (Jungk, Müllert, 1989/1981). In 1994, the European Commission selected the instrument for pilot use in the UK, Germany, France and the Netherlands, customised it under the name "European Awareness Scenario Workshop" and registered it as a trademark, thereby having a standardised instrument to develop sustainable innovation paths (predomininantly in the field of urban development).[10]

3. In-depth studies on mechanisms: A third step in the empirical research process builds on the reconstruction of innovation journeys of individual instruments and supplements them with an in-depth analysis of critical processes (e.g. branching points, controversies, shifts in design). In-depth studies will be guided by hypotheses on dynamic mechanisms, with which the momentum the policy instruments' innovation journeys can be explained..[11]

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[9] Speech to the National Council of Voluntary Organisations, 3 September 2007 (http://209.85.129.132/search?q=cache:ZrL1pzrPcnMJ:www.number10.gov.uk/output/Page13008.asp+Gordon+brown+%22new+type+of+politics%22+%22citizens%27+juries%22&cd=1&hl=de&ct=clnk&gl=de), accessed 23 April 2009

[10] http://cordis.europa.eu/easw/home.html, accessed 23 April 2009

[11] Possible avenues of further research could be e.g. the formation and co-ordination of innovation networks, the development of standards and quality assurance processes, adaptation in existing administrative structures, linking with cultural values and general political aims, competition between alternative instruments, visions and future expectations, as well as the role of model simulations.

Dynamics of governance domains as contexts of application

Alongside the focus on innovation journeys, a second empirical approach will be followed, in which the contexts to which policy instruments are applied, will be investigated. In order to understand how policy instruments interact with governance patterns and ongoing political dynamics in contexts of application, we investigate the historical development of selected governance domains, searching for points of contact with the innovation journeys of the policy instruments. Our aim is to investigate the shaping of policy instruments within individual fields of application – but also the role which policy instruments play in stimulating governance change within a domain context. Central questions are:

- Which development phases of policy patterns in governance domains can be discerned?
- Which technological and ecological context conditions are characteristic of these phases and how are they connected with change of governance patterns?
- When and in which form do policy instruments come into contact with particualar contexts of application? Which problems do they link up with, which actors support or fight them, and with which arguments and strategies?
- How do policy instruments fit with existing political, technical and ecological contexts and with already established policies or what kind of changes do they trigger?

Case selection

A final decision with regard to the case selection will be possible once a rough outline of the innovation journeys of investigated policy instruments has been reconstructed. Only then will it be possible to ascertain which application contexts are especially relevant in shaping their development. An initial selection is listed here, based on a provisional overview of the innovation journeys of emissions trading, biodiversity certificates, citizens' juries and scenario workshops.

Climate protection and nature conservation represent two different problem areas for the development of the policy instruments being investigated. The various political, cultural, techno-economic and geo-ecological context structures in different domains are considered relevant for the formation of specific governance patterns in these problem areas. In this way, policy instruments encounter specific, distinct structures of climate protection and nature conservation policy in the EU, USA and Chile. Six domains of application derive from this.

		Political-administrative context		
		EU	**USA**	**Chile**
Problem area	**Climate protection**	Domain 1	Domain 3	Domain5
	Nature conservation	Domain 2	Domain 4	Domain 6

- *Climate protection:* Governance structures for climate protection deal with problem analysis and development of solutions for global climate changes caused by increased greenhouse gas concentration in the atmosphere. The reduction of emissions from the combustion of fossil fuels occupy centre stage, as do (since around 2000) measures of adaptationto regional effects

of global climate change. Due to the complexity of the global climate system, estimating these regional effects is considerably challenging. Since the late 1980s, policies for climate protection policy have been developed, both at international and national level (Oberthür, 1993; Bauknecht, 1997). With the adoption of international obligations to reduce greenhouse gases in the 1997 Kyoto Protocol, climate protection has advanced to the most prominent arena of sustainable development (Oberthür, Ott, 1999). The EU was for a long time pioneer in this field, whereas the USA built up significant resistance to it. As a developing country, Chile is heavily influenced by international stimuli, and especially financial and technological transfer. By adopting the Kyoto Protocol for climate protection, the emissions trading policy instrument has managed to make a global breakthough; at the same time, governance patterns in the realm of climate protection have changed significantly (Levy, Newell, 2005). The instrument has been used to its greatest extent in European climate protection policies; in the USA, it has only managed to break through in a few States (Matthes 2008). Chile was the first developing country to introduce an emissions trading system for local air pollution. Furthermore, it is integrated into worldwide emissions tradition for greenhouse gases via the Clean Development Mechanism. Since the mid-1990s, deliberative procedures, such as citizens' juries and scenario workshops, are also being increasingly applied to climate protection policy, especially in the EU (Hove 2000; Walk, 2007). This holds true at various policy levels when dealing with the challenges of a long-term redesigning of industrial society, especially with regard to energy and transport systems (RIVM, 2002). The USA uses deliberative procedures in a few climate protection cases (Jefferson Center, 2002; Cavalier et al. 2009). To our knowledge, deliberative procedures have not been applied to climate protection in Chile, so far.

- *Nature conservation* Unlike climate protection, governance structures for nature conservation developed initially at local level (the beginnings can be traced right back to the 19th century) (Dominick, 1992). In this case, the focus is on articulating and handling the problem of the destruction of nature by human intrusion, and especially the restriction of natural habitat through land usage. Towards the end of the 1980s, global governance structures for the conservation of nature evolved in connection with the problem of the global decline in biodiversity (Stoll-Kleemann, Bertzky, 2006). Nature conservation policy forms are closely connected to culturally rooted images of nature and corresponding values and patterns of use, as well as to settlement structures, consumption and production patterns, technological developments in the energy, irrigation and transport sectors, to geographical and climatic conditions as well as specificities of local eco-systems (Rientjes 2002). Nature conservation can be regarded as a fundamental sphere of activity for sustainable development. This is predominantly due to boundary definitions and the negotiation of relations between nature and society (MacNaghten, Urry, 1998), as well as the difficulties in dealing with the complexity of ecological systems (Jedicke 1998). In the EU, nature conservation policy is characterised by high population density and cultural landscapes (Knat, 1993; Keulartz, Leistra, 2008), whereas USA nature conservation policy is

typified by the idea of “wilderness” and nature park management (Oelschlaeger, 1991). In Chile, nature conservation policy has developed in association with tourism and an export-oriented forestry (Jax, Rozzi 2004; DiCastri, Balaju, 2002). Nature conservation policy is one of the fields in which deliberative procedures have developed and expanded in the 1990s. Here, it has to do with argumentative translations between differing evaluations and user demands, and ecological requirements for the preservation of ecosystem resilience and bio-diversity (Stoll-Kleemann, Welp 2008; Mann, Absher 2008). Nature conservation policy is also a recent field of application for tradable permits. In the USA (as well as in Australia), experiments have been undertaken to establish "conservation banks” and the distribution of “species credits.” Currently, these experiences are being intensively discussed in the EU and Chile. Implementation experiements are expected to take place during the duration of the project.

Transdisciplinary scenario development

Policy foresight method

The third empirical approach envisages the devising, together with actors from the field, of scenarios which will continue the investigated policy instrument innovation journeys into the future. On this basis, strategies for shaping ongoing processes of innovation in governance can be developed.

In a first step, we will develop a specific method with which alternative development paths for selected policy instruments can be constructed, evaluated with regard to sustainable development criteria and taken as a starting point for anticipatory action strategies. This will take place on the basis of a focused literature review, preliminary results from earlier phases of the project as well as prior research work undertaken by individual team members.[12] The method foresees development of scenarios, sustainability evaluations and strategies by diverse actors, who are involved in, or affected by, the design of innovative governance forms. The historical investigations, and the mechanisms and factors of influence identified therein, act as input for the selection of participants and construction of possible future development paths.

Scenario workshops on future pathways of innovation in governance

The double empirical focus on the innovation journeys of policy instruments and development of governance domains is taken up in the design of the foresight process. For two policy instruments (e.g. emissions trading and citizens’ juries), we will develop “macro scenarios” of possible future pathways of their global innovation journeys. For this we involve actors from transnational networks of policy design. These “macro scenarios” will from a background for developing “micro-scenarios” of the development of these policy instruments embedded in particular domains of application (e.g.

[12] As the methodology develops, it can build on elements of the sustainability foresight method, which was developed (with contribution by the group head) and applied with more than 100 actors from the field in the German service sector (Voß et al. 2004; Voß et al. 2005; Voß et al., 2006; Truffer et al. 2008). First successful experiments, which considered future scenarios for policy structures, were implemented in the “regulation of network access” field (Voß et al. 2006; Voß, Bauknecht, 2007; Praetorius et al., 2008).

emissions trading in the USA, citizens' juries in European nature conservation policy). Here, we involve actors from the relevant local policy design networks.

Project structure

The proposed investigation design will be implemented by a team of four researchers and a project manager. Alongside inidividually defined tasks, which derive from the project design, all team members will also follow an individual qualification plan. For each researcher an academic thesis will be the core of their plan, whereby the project manager will qualify in the management of trans-disciplinary research projects. Qualification plans are embedded in the common research programme and each furthers a specific aspect of the research programme which is central to the profile and professional development of the person concerned. The matrix in Figure 4 offers an overview of the linkages of the three empirical strands of the project design (columns) with the individual theses (rows) and the planned results.

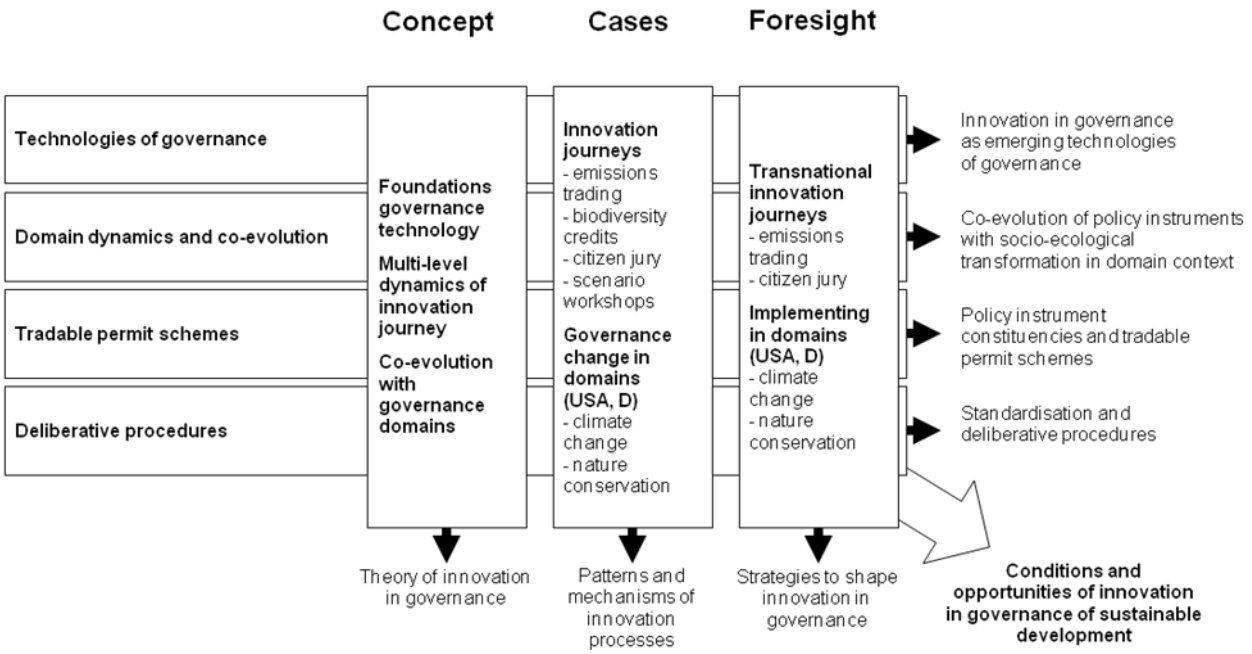

Figure 4 Project structure and planned results

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