

*I*<sub>ntegrative</sub> *S*<sub>ystems and the</sub> *B*<sub>oundary</sub> *P*<sub>roblem</sub>

**Contextual Interaction Theory and the issue of boundary definition:  
Governance and the motivation, cognitions and resources of actors**

***Contribution to theoretical framework ISBP***

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## Table of contents:

List of figures .....	2
Preface .....	3
1. Introduction: an interpretation of the ISBP project .....	4
2. Arrows, processes and actors: mapping social domains.....	6
3. Contextual Interaction Theory: a layered explanation of social processes.....	11
4. Types of boundary judgments .....	18
5. Studying boundary judgments and their impacts .....	22
6. Strategies for managing boundary judgments .....	25
Glossary .....	27
References .....	29
Appendices .....	31

## List of figures

Figure 1, Basic model ISBP – 1 .....	4
Figure 2, Basic model ISBP – 2 .....	5
Figure 3, Basic inputs – process – outputs scheme.....	6
Figure 4, Interactions in an arena form a process.....	7
Figure 5, Interaction process as link between phenomena .....	7
Figure 6, Process model with actors out for graphical reasons .....	8
Figure 7, Model of a relevant policy domain for environmental consequences of consumption.....	8
Figure 8, Schematic overview of a domain and (intended) policy action .....	9
Figure 9, Zooming in into the map of a social domain (graphical representation).....	10
Figure 10, Process model with the actor characteristics used in Contextual Interaction Theory .....	11
Figure 11, Dynamic interaction between the key actor-characteristics that drive social-interaction processes and in turn are reshaped by the process .....	12
Figure 12, Layers of contextual factors for actor characteristics.....	14
Figure 13, Central research model of the Euwareness study .....	16
Figure 14, Three dimensions of sustainable development that require integration and are thus relevant for boundary judgments.....	19
Figure 15, Multiple process model as part of an infinite fabric .....	20
Figure 16, Domain boundary perceptions: .....	21

## **Preface**

This document is the “report on the analytical framework and methodology to be delivered to WP1”, that was originally foreseen in the ISBP project plan, but later skipped as a deliverable, since it is risky to promise an official deliverable after only three months. Nevertheless the agreement was made in Stockholm that a Twente contribution to ISBP’s theoretical approach would be welcomed at this early stage.

The report integrates some my work on process analysis and the “mapping” of social domains, the elaboration of a governance concept as an expansion of the concept of policy, contextual interaction theory (with its roots in policy instruments and implementation research), methodological features of the Euawareness project, and ongoing studies at CSTM, predominantly those on water management.

Like our research topics, this document has a domain of its own. Let’s specify some of its boundaries. While the project as a whole is meant to deliver empirical and practical results, this report is meant to be largely theoretical. Thereby it is by no means a proposal for a sort of theoretical constitution for the ISBP project. I see it as complementary and supplementary to Nick Winder’s excellent ISBP discussion paper. In this respect it’s only purpose is to share some ideas in the hope it might be one of several sources of inspiration for team members. It makes explicit some of my current thinking with relevance to the project and in that way should enable fruitful exchanges with other team members. This implies that the text is not “finished” and probably never will be. It is more a portfolio of ideas in evolution, with this ISBP report as an intermediate version. Furthermore it is not my intention that it will ultimately become a joint ISBP-team document, implying that it’s further development would be increasingly “negotiated text”.

Nevertheless I welcome any comments, needed clarifications and suggestions and am open to any suggestions for co-authored papers that can be partially based on this text (and wherein some “negotiated text” would be just fine).

Hans Bressers

Enschede, January 2007

## 1. Introduction: an interpretation of the ISBP project

ISBP addresses questions like:

- How to make people cooperate when knowledge perception differs?
- How to stimulate *convergence* of stakeholders towards cohesion and compliance?
- How to set *boundaries* of social systems and problems without negatively affecting social cohesion?

Such questions are especially relevant in the empirical domain of conflicting demands on life support systems, both cultural and natural, where sustainable development issues are at stake. (The terms in italics are described in the glossary.)

Natural and cultural resources often have rival uses and users. A use is rival to another use in as far as it decreases the usefulness of the resource for that other use. This rivalry can be both homogeneous and heterogeneous. A rivalry because of homogeneous use can for instance occur when upstream farmers use too much water from a river for irrigation, so that downstream farmers are left with nothing. The same example illustrates heterogeneous rivalry when one considers nature as a user too. Another example of a possible rivalry is the heterogeneous use by tourists and worshippers of old churches.

Rivalries as these call for more integrative governance to protect resources while balancing the manifold stakes of different actors and at different spatio-temporal scales. Challenging European policy innovations, like the WFD that sets new standards for the protection or even reconstruction of natural water resources, can only meet compliance when such integrated governance evolves. While no actor has control of all the resources and behavioural options that are jointly necessary to answer such challenges, this means that mutual adaptation and – often negotiated – coordination are prerequisites.

The first basic model of ISBP could therefore be visualised as such:

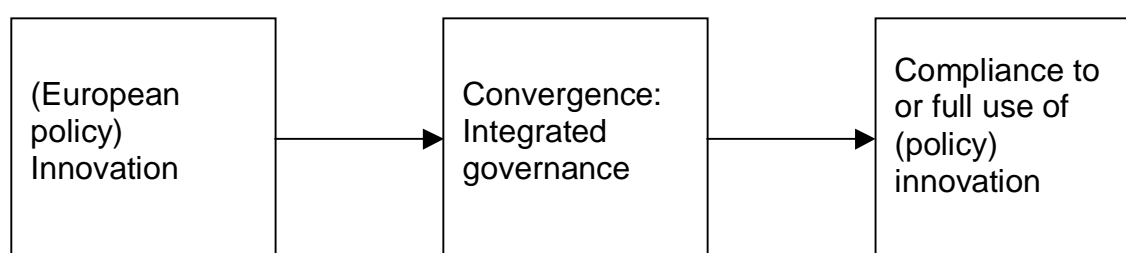


Figure 1, Basic model ISBP – 1

In the study the emphasis will be on the first identified relationship. In fact the development of more integral governance regimes that include the innovation is a potential change over time. This is visualised in the next figure. The second relationship will not be at the core of the research since there is ample theoretical and empirical support for this assumption. Nevertheless the case studies will provide many illustrations of the correlation between the last boxes (or the counterfactuals of course).

The first relationship is elaborated by two intervening factors. The first, the *boundary judgments* on the relevant system and problem, is central to the project and is seen as the

basis for the conceptual models with which actors interpret observations as belonging or not to the *system* or problem and thus relevant in that respect. Divergent *boundary judgments* hamper the inclusion of the (policy) innovation in all elements of governance, beginning with the cognitive (knowledge) aspects of them. Next, but in interaction with *boundary judgments*, the *receptivity* of actors – people, groups or organisations – influences the way in and the degree to which the innovation is reflected in governance becoming more integrative (Jeffrey & Seaton 2003/4). The receptivity is not only dependent on the degree of exposure to new knowledge, but also more specifically on the way the actor can associate and exploit new knowledge around existing knowledge, activities and objectives. This requires that the actor “lets the outside coming in”, opening and regrouping understandings to include reckoning with the new knowledge. This can be seen as an unbounding and rebounding *process*, for which a further cultural context matters. All this leads to figure 2.

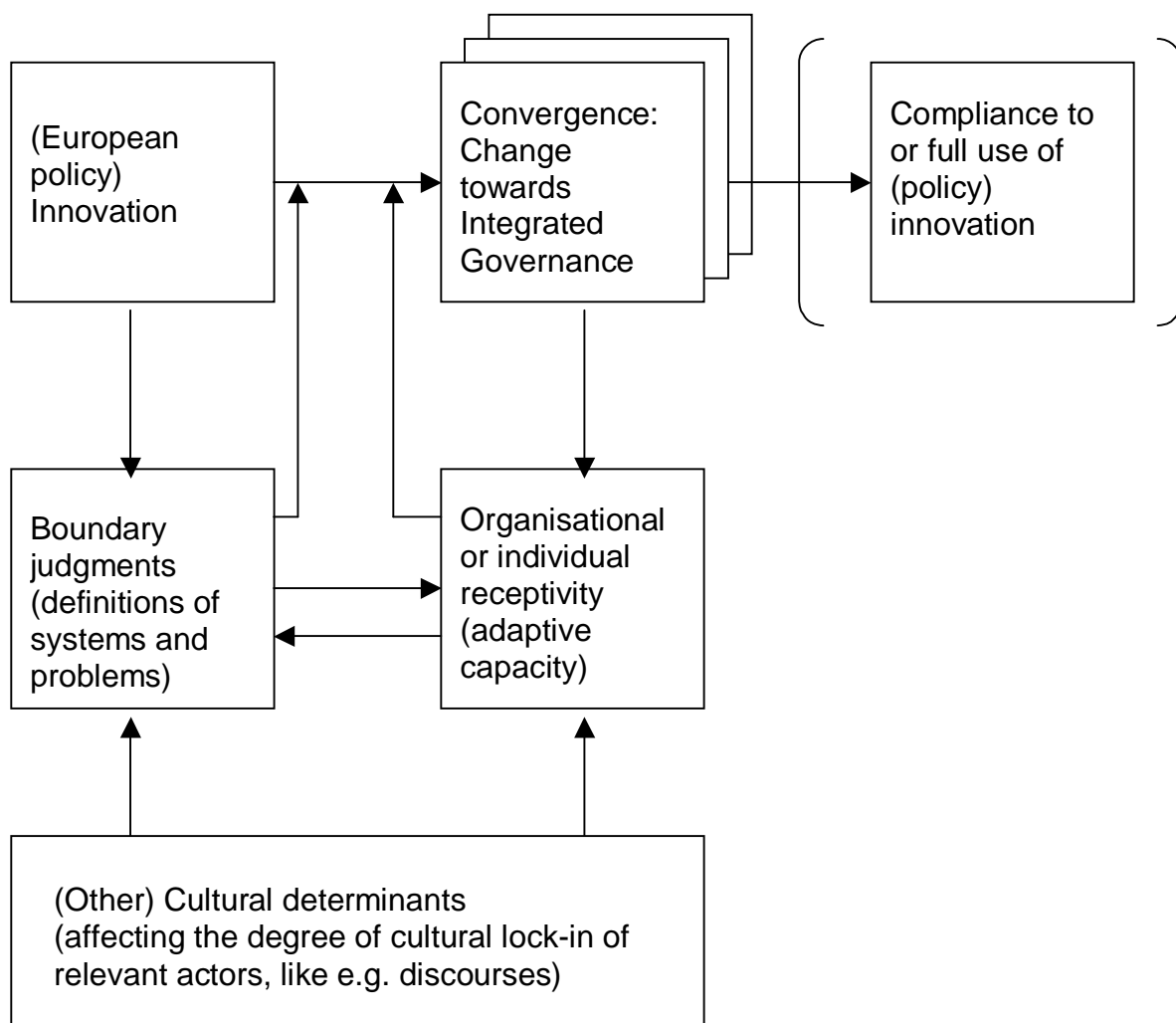


Figure 2, Basic model ISBP – 2

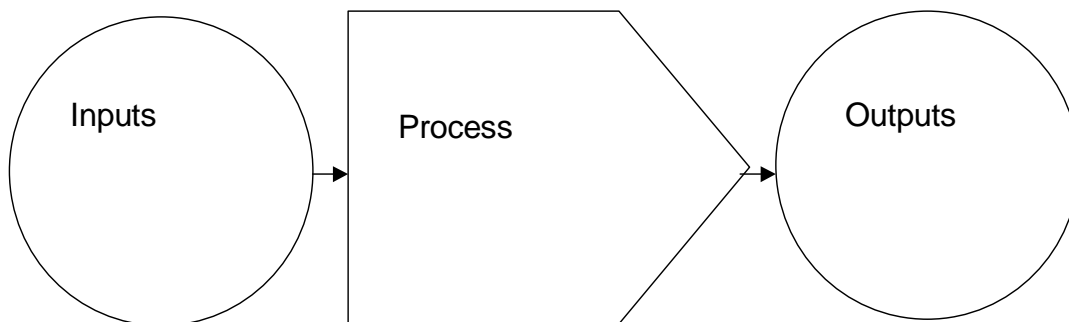
## 2. Arrows, processes and actors: mapping social domains

The sort of “social phenomena” that are addressed in the ISBP project, are still often studied, like e.g. in many economic studies, with the help of more or less mechanical theories of full reality, often supported by linear quantitative modelling. In fact there is nothing wrong with this. I also used boxes connected by arrows to visualise the structure of ISBP in figures 1 and 2. But only as long as one realizes that this is just one of many possible abstractions of reality that hence has its limitations.

The same in fact holds for more interpretative and social constructivist studies. In fact since post-modernism and the ‘argumentative turn’ in policy studies this approach can be seen as dominant in several disciplines. However also these studies have their limitations. There is no one-size-fits-all in social science.

In this report I choose with the same modesty for an approach that I regard as striving for a middle position (cf. Quade 1980). Trying to be as parsimonious and deductive as possible, while also trying not to shut out relevant factors too easily. The main text will display lots of figures to illustrate my points. There will also be references to separate appendices in which certain features are more elaborated.

While cause-arrow-effect representations tend to make the reader forget that it are human beings and their organizations that in fact process “causes” into “effects” I choose a *process* model for our relations. Below a basic input – *process* – output scheme:



*Figure 3, Basic inputs – process – outputs scheme*

The concept of “*process*” is here not used in one of its two common meanings: “change over time” (such “processes” are visualised like the *Convergence* box in figure 2), but in the meaning of conversion process, like for instance in the famous early political science model by David Easton. A conversion process is not a change of a phenomenon, but something that forms the relationship between phenomena<sup>1</sup>.

Several inputs are in such a process “processed” into something new and different. Since in social reality this conversion is not produced by e.g. production lines, but by activities and interactions of actors (people, representing themselves and/or organisations), they are specified as “interaction processes”.

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<sup>1</sup> Nick Winder’s concept of process seems to encompass both meanings (Winder 2006: 5)

Such interactions take place in what is often labelled an “arena”, of which the boundaries – issues, actors, (inter)actions in a certain space-time “envelope” - are explicitly or implicitly specified by common agreement or else will be in flux.

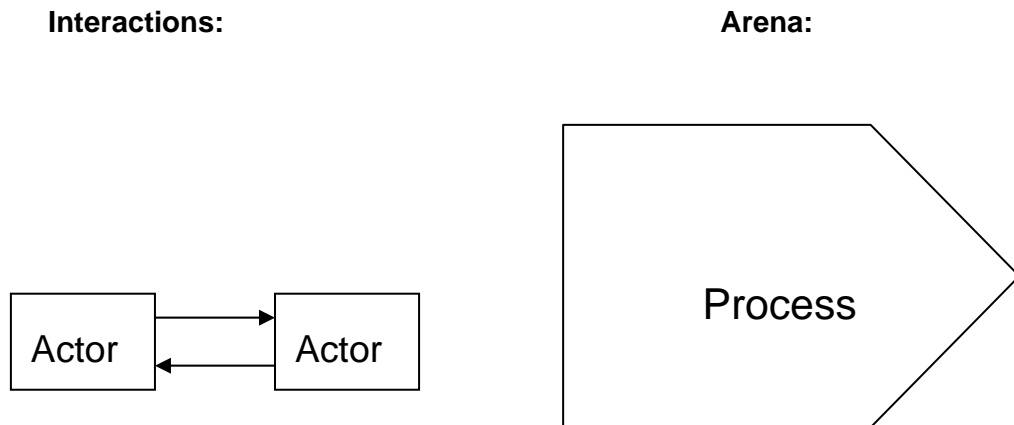


Figure 4, Interactions in an arena form a process

The resulting scheme looks then as such:

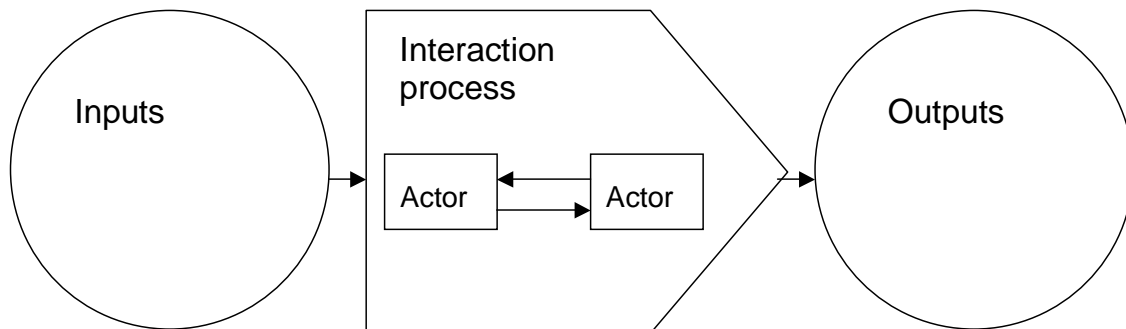


Figure 5, Interaction process as link between phenomena

The interactions are visualised here as based on two actors. Of course in many interaction processes there are more active actors. So to some extent this representation is only symbolic. On the other hand: while in many processes multiple issues are at stake, in many cases per issue there will be two sides, only two groups of actors.

In many of the process models that I use I give the actors separate places outside of the process box to make it possible to add more actors and specify the relations between them.

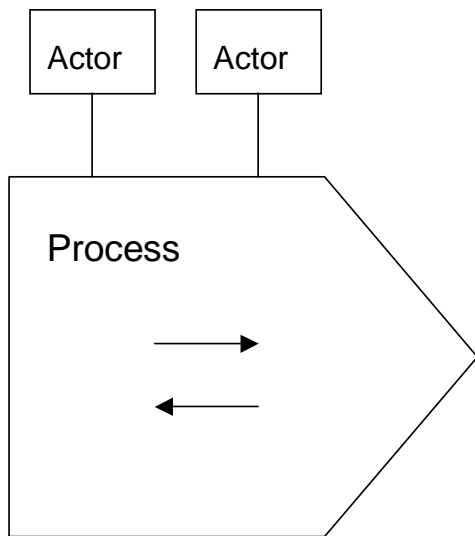


Figure 6, Process model with actors out for graphical reasons

This can include *network* actors that do not take part directly in the process, but are relevant in other ways as background actors, for instance by providing inputs for motivation, sources of information and interpretation (cognitions) or support with resources (capacity and power). This is for example done in this model on the possible points of action for integrated policy schemes for the sake of limiting the environmental implications of consumer behaviour (Bressers and Ligteringen 2007). Of course that can also be multiple actors attached to each process.

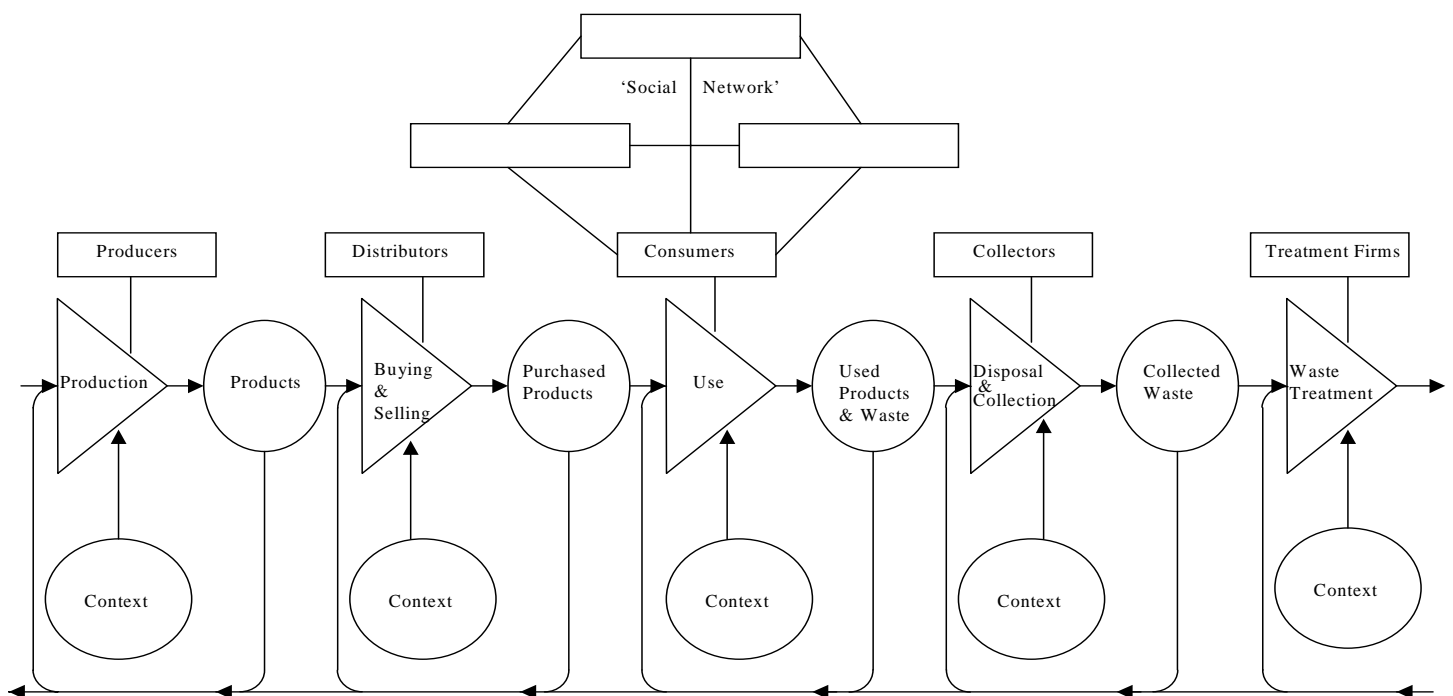


Figure 7, Model of a relevant policy domain for environmental consequences of consumption

The model also shows the selectivity that arises from its projected use. Of course all processes identified have more inputs and outputs than specified, that have an impact on more processes that are not included in the scheme. Making a model is a sort of boundary judgment. The other way around, *boundary judgments* can be represented by such mental “maps”.

In this way it is possible to develop extensive maps of relevant social realities that enable to indicate the various conceivable domain boundaries. Relevant deliberate interventions by purposeful actors (for instance, but not exclusively by governments) could be included in such visualisation by attaching the direct outputs of their action to the targeted processes in society that the model discerns. This is visualised in figure 8. (*A stepwise elaboration of this method of ‘mapping’ policies and their domain is not yet available in English, only in Dutch.*)

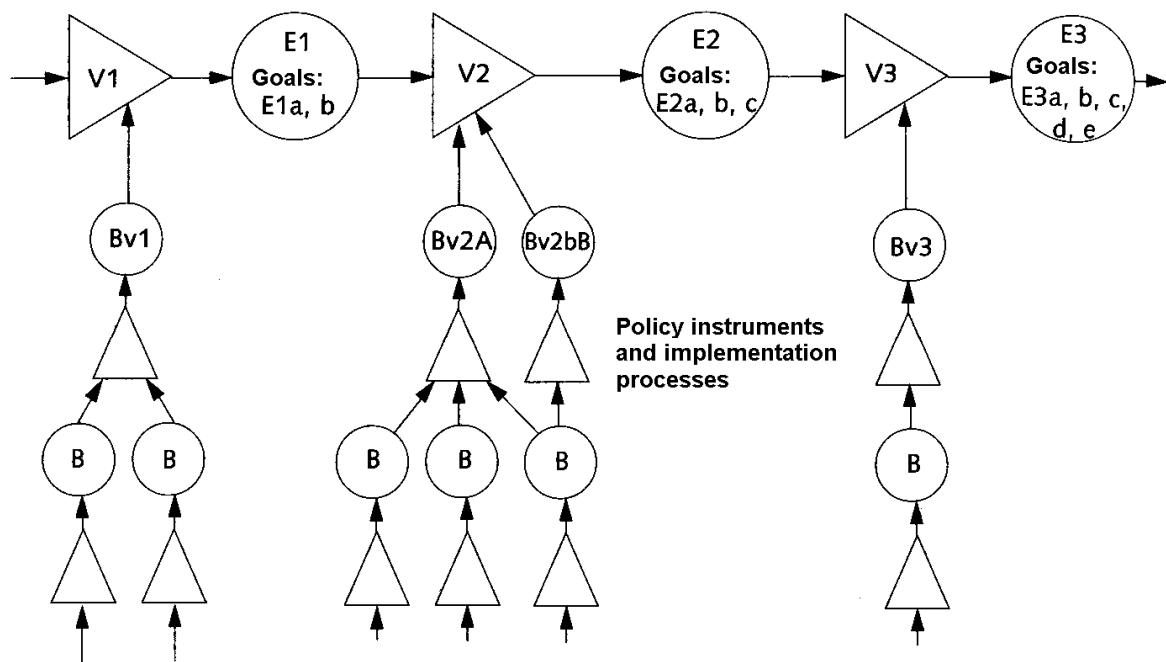
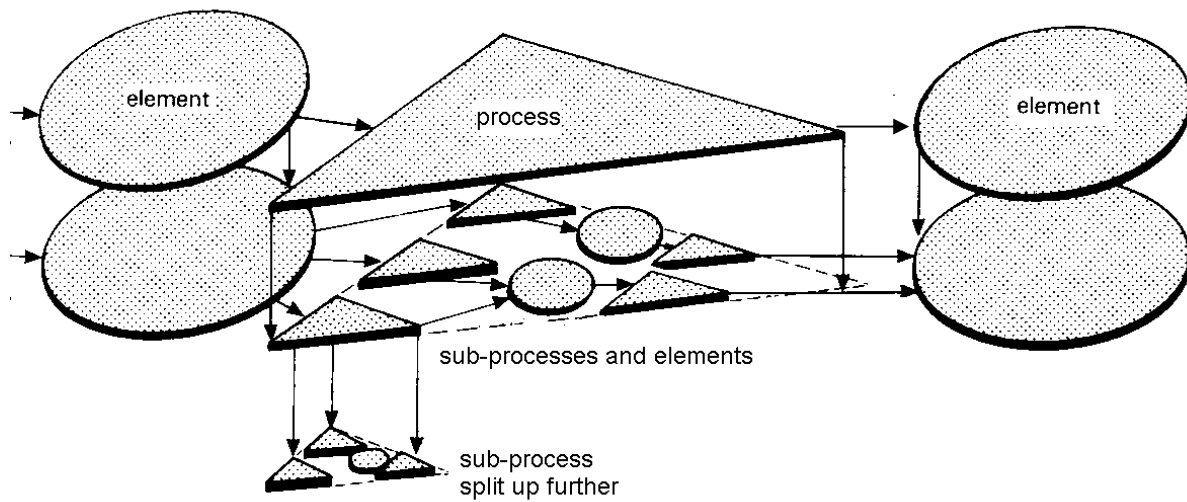


Figure 8, Schematic overview of a domain and (intended) policy action

The domain is here a series of three processes in society in this case: V1 – V3, and their outputs – elements of the *system*). The figure also shows the goals with these elements that are specified in a certain policy or other intended action, the intended extra inputs to the relevant processes as specified in this (intended) action (the Bv’s), and the processes and intermediate outputs that are necessary to support these. (Actors are not shown separately in this graph.)

When in this way processes are identified that are regarded as relevant to the study, there are still various options to deal with them. The first way is the recognize the process character, but nevertheless deal with the relation between phenomena that this process produces as merely a causal relationship, for instance for the purpose of quantitative modelling (the “back to the arrow” approach). A second way of analysing such process is to further divide the process up into sub-processes and sub-elements. This way one “zooms in” into the part of the domain one wishes to concentrate the analysis on. In fact there is no ‘right’ or ‘wrong’ level of abstraction. Like with geographical maps it is just what serves the purposes of the user best.

Figure 9 illustrates this approach graphically, again without presenting the actors involved separately.



*Figure 9, Zooming in into the map of a social domain (graphical representation)*

While zooming in can reveal more detail in description it does not really provide a means of explanatory analysis. As an alternative for quantitative analysis and modelling a more qualitative actor-oriented approach, that could start at each level chosen, would be the third option to analyse processes. This approach often signals also the start of a more interpretative and less explanatory method of analysis. Again I suggest a middle position here, as is explained in Appendix 1, pp. 287-292.

In the next section I will further explain how I approach the explanation of social interaction processes.

### 3. Contextual Interaction Theory: a layered explanation of social processes

There are zillions of factors conceivable that might influence the course and outputs of an interaction process. Fifteen factors, each with only two values, define nevertheless more than 30.000 different combinations of circumstances<sup>2</sup>. But since all influences flow via the actors involved it is possible to set an inner core of factors that is far more parsimonious, at least to begin with. In the next figure I include these factors. To be able to present the next theoretical points more clearly, I'll keep the actors graphically in the process, were they "belong", as much as possible.

Arena:

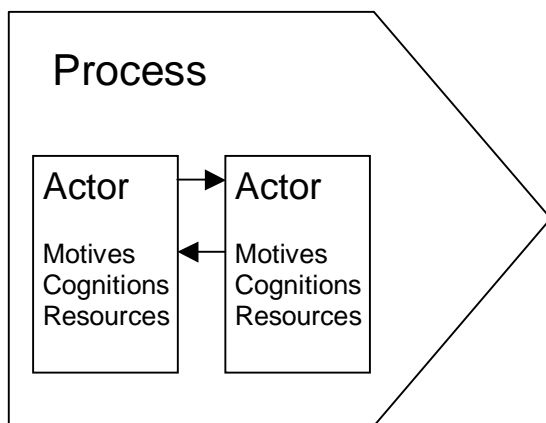


Figure 10, Process model with the actor characteristics used in Contextual Interaction Theory

The basic assumptions of Contextual Interaction Theory are quite simple and straightforward. There is a dynamic interaction between the key actor-characteristics that drive social-interaction processes and in turn are reshaped by the process.

*Assumptions:*

- Policy processes are actor interaction processes
- Many factors have an influence but only because and in as far as they change relevant characteristics of the involved actors
- A first layer of such factors is specified in the boxes of the figure 9 below, including how they influence the core actor characteristics. Of course these factors can in turn be influenced by numerous other factors from within or outside the process.
- These characteristics are: their motivation, their cognitions (information held to be true) and their capacity and power (see Appendix 1, p. 14 and Appendix 2, pp. 13-14).
- These three characteristics are influencing each other, but cannot be restricted to two or one without losing much insight.

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<sup>2</sup> Of course, computer models could handle this. The point is however how to make sense theoretically of the different impacts of combinations of so many and mostly qualitative factors. Furthermore the 'module'-like solution to this *complexity* presented below proves to be far more flexible for different uses in analysis.

- The characteristics of the actors shape the process, but are in turn also influenced by the course and experiences in the process and can therefore gradually change during the process.
- The characteristics of the actors are also influenced from an external context of the governance regime (a/o. institutions and more or less stable *network* relationships) (represented further below in figure 12).
- Around this context there is yet another more encompassing circle of political, socio-cultural, economical, technological and problem contexts (represented further below in figure 12).

Below, in figure 11, many theorems and other ideas are employed that are not elaborated upon in this text. Nevertheless many relations will be understandable. Compared to previous ones this figure does also show process development (change processes – in the form of the processes over time). The actor characteristics are much more elaborated here, not visualised as linked to specific actors and for the same reasons as I sometimes do with the actors, placed outside of the process boxes. This enables also to show the mutual influence between these factors and the process itself.

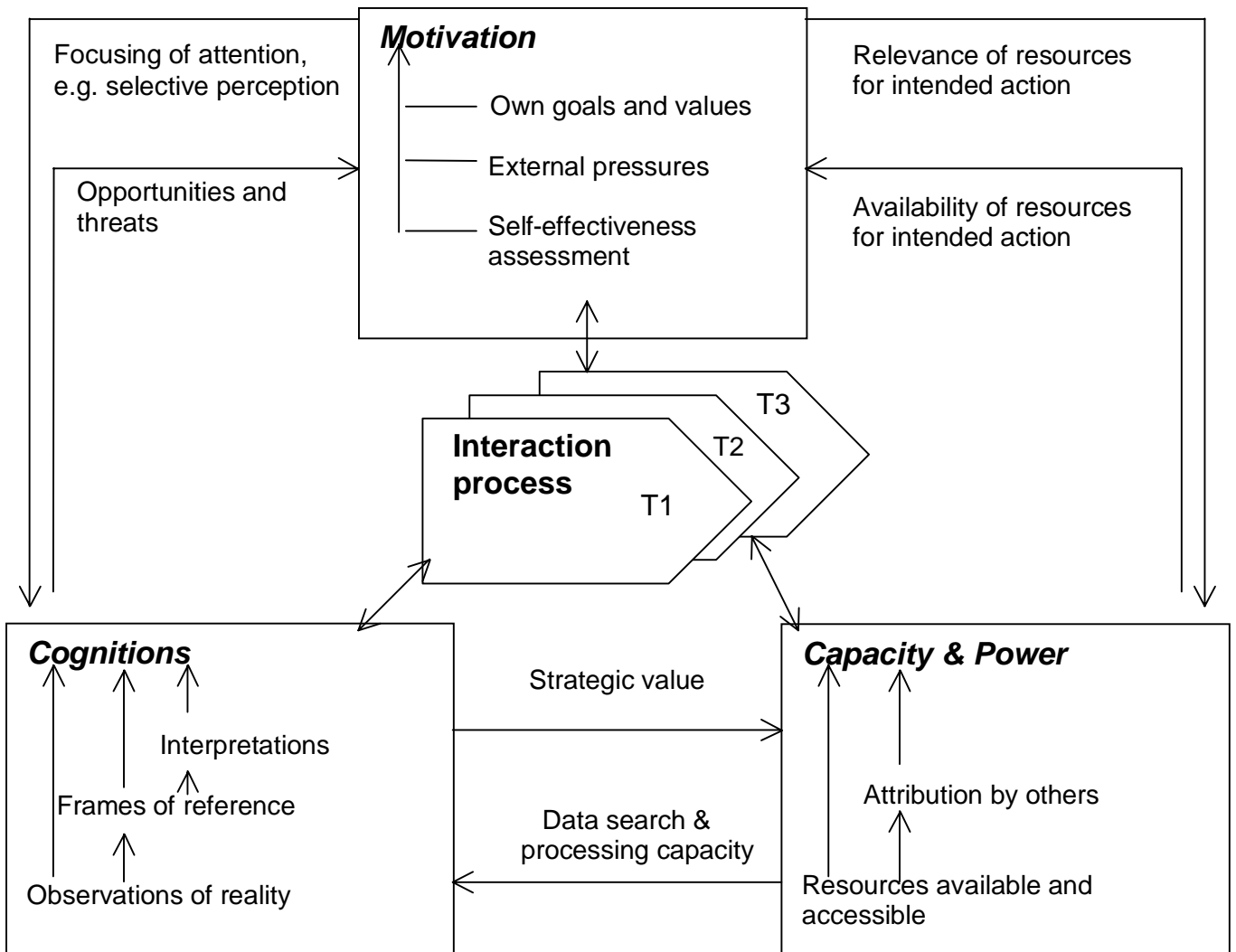


Figure 11, Dynamic interaction between the key actor-characteristics that drive social-interaction processes and in turn are reshaped by the process

In this figure it is in “cognitions” box in this model that *boundary judgments* are included. To some extent such judgments can be regarded as having direct effects on the process, for instance when matters arise as who one wants to deal with – thereby recognising such actor as legitimate player. To some extent it can also be seen as a frame of reference, a filter that creates more *receptivity* to some information than for other. From the figure also a data-gathering and classifying methodology can be derived to assess the way new information is met with *receptivity* or not (see section 5).

Other frames of reference are termed by Axelrod (1976) as “cognitive maps”, by Schön (1983) as “frames”, by Sabatier and Jenkins-Smith (1999) as “policy core beliefs” and “deep core beliefs”. Dryzek (1997) speaks of “discourses”, thereby also stressing the language dependency of understanding and the role of words, one-liners, stories and the like to guide, but also to restrict and bias understanding. Williams and Matheny (1995) discern a managerial, a pluralist and a communitarian discourses when studying waste facilities siting. In the Dutch case studies the original division of Dryzek, a division in an expert, market and people discourse will be used (Dryzek 1997: 63-119).

For processes in which – if necessary per issue or sub-process – two sides or groups of actors can be recognised and that are triggered by a certain given “task” as one of the inputs (so processes that at least to some extent can be labelled implementation processes) a specification of this model has been produced that includes hypotheses for each combination of circumstances (see Appendix 1, also other backgrounds of this theory can be found there). With this feature Contextual Interaction Theory goes beyond well known models like the IAD (Institutional Analysis and Design framework) of Elinor Ostrom (1986, 1999), that specify contextual variables for the “action arena”, but does not specify how these will impact the course and outcomes of the process; and the ACF (Advocacy Coalition Framework) of Paul Sabatier (Sabatier and Jenkins-Smith 1999) that mentions relevant contextual factors, but concentrates in its elaboration only on the development of policy beliefs and the *network* formation between actors. On the other hand Fritz Scharpf (1997) does elaborate his “games” in a way that predicts the course and result of the process. However the specifics of implementation situations do not get much attention and the power factor is hardly elaborated, the emphasis is on the ‘orientations’ of the actors (what I would call motivation).

The institutional, *network* and other contexts are represented in contextual interaction theory as factors that influence the motivation, cognitions and resources of the actors involved (in fact are only influential in as far as they do). When the boxes with actor characteristics are folded back in the process, there is room to visualise the further contexts as assumed in Contextual Interaction Theory. Figure 12 shows these contexts as overlapping entities. The figure can be best read from right to left, implying that each step leftwards gives a context for the previous step, while not excluding the possibility of direct impacts of the broader contexts.

Note that in this figure there is also an arrow back from the process to its layered inputs. While I earlier stated that I take processes as primarily conversion processes this does not imply that both the inputs (context) and the nature of the process will not also change over time. On the contrary, it is likely that this change is also partially produced by the same process(es) that is/are impacted by these factors. This is relevant for ISBP since the emphasis in this project is not on the direct products of the processes involved, like whether a nature area is actually restored, but on the relationship between evolving *boundary judgments* and the *convergence* (“harmonising institutions” in the proposal, in our model linked to the *structural context*) needed to make full use of (policy) innovations. So the boundary judgments of the actors as part of their cognitions, not only influence the ongoing process in the case under study, but also are both shaped by the implicit boundary judgments in all three levels of contexts, and (re)shape them somewhat in turn. Thus the

process not only “produces” a certain degree of compliance with or good use of the (European policy) innovation, but also influences to a certain degree the contexts under which it develops.

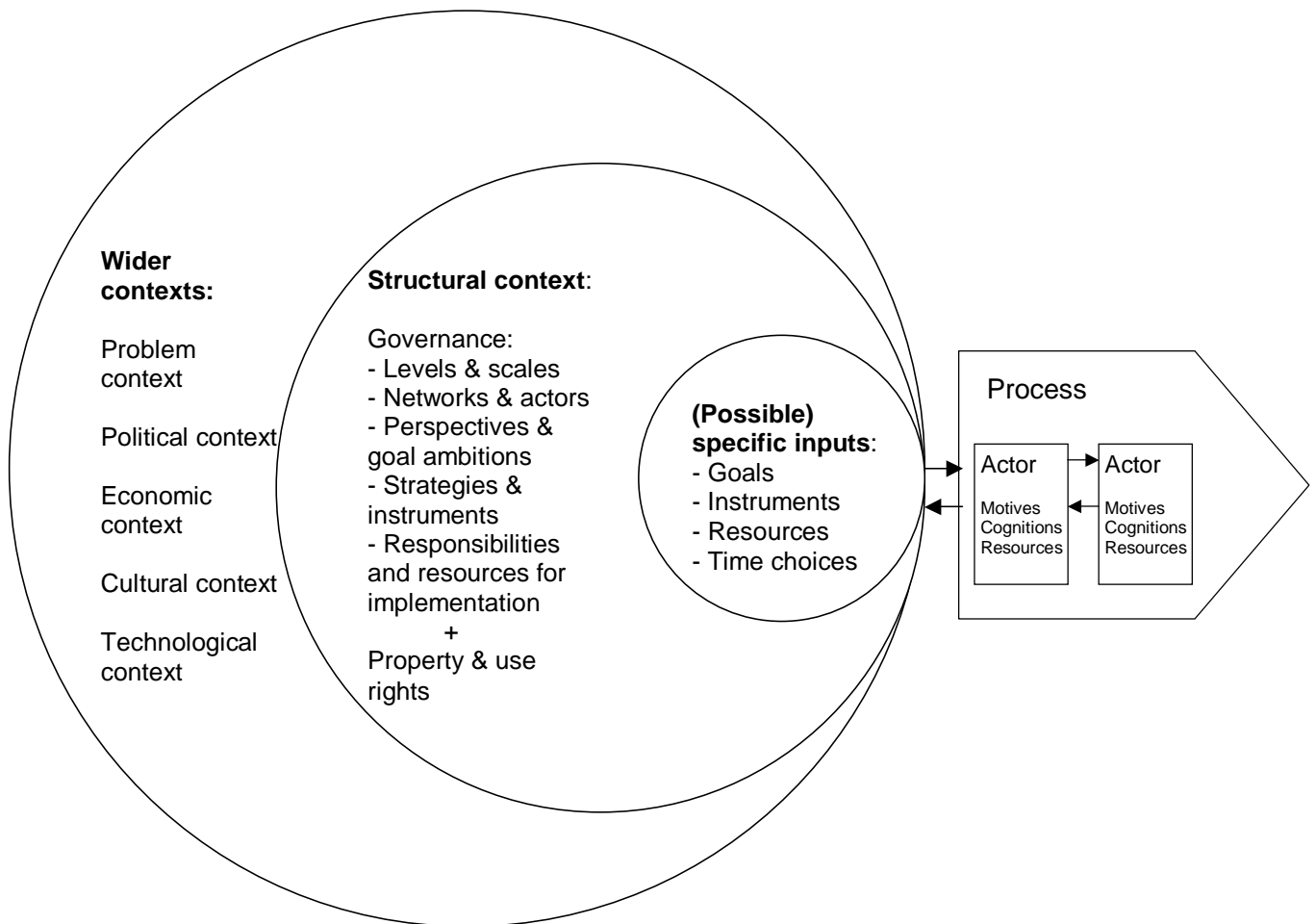


Figure 12, Layers of contextual factors for actor characteristics

All kinds of processes can be studied this way. Not only the processes of implementation of a certain policy like the national policies that stem from the WFD. But also the re-creation of the structural regime context (governance & property and use rights) itself. All social processes simultaneously convert specific inputs into outputs, but also are both influenced by more encompassing contexts as input and might change these to some extent at the same time.

In this way the process is not only influenced by the layers of context that are specified, but also influences the contexts. For instance, when within the “*Networks and actors*” element of governance there is a strong pressure of “*policy brokers*”, this could increase the likelihood that actors in the process absorb new knowledge and that they are able to adapt *boundary judgments* to new circumstances. *Policy brokers* are actors that have process oriented goals rather than contents oriented goals, and for that reason are more concerned with for instance the speed and consensus of decision making than with the precise contents of the

decision<sup>3</sup>. Some authors also discern alternative “adaptive networks” to the usual “power networks”. Here – freed from short term gain oriented debate – innovative ideas could develop that can be brought back into the power networks once they proved sufficiently attractive for creating win-win opportunities or breaking stalemates (Nooteboom 2006). Creating such pathways is an important aspect of what is labelled “transition management” in the Netherlands (Rotmans a/o. 2001).

Some partners in the ISBP team have worked with the factors that are specified in figure 13 under “Governance” in the EU - Aquadapt project. They are based on an analysis of governance and policy studies literature and stem from a book on “Governance across social scales” (2003, see Appendices 2 and 3, for more backgrounds and specification, including the change model that is associated with it and where motivation, cognitions and resources play an important role, and for references to the literature used).

In the following brief overview (taken from the original text) the “elements of governance” are specified in a number of questions that are derived from the literature from which this governance concept is developed:

#### A model of governance in five elements

##### *(1) Levels and scales of governance*

Where? – Multi-level

Which levels of governance dominate policy and the debate on conducting policy, and in which relations? What is the relation with the administrative levels of government? Who decides or influences such issues? How is the interaction between the various administrative levels arranged?

##### *(2) Actors in the policy network*

Who? – Multi-actor

How open is the policy arena in theory and practice, and to whom? Who is actually involved and with what exactly? What is their position? What is the accepted role for government? Which actors have relevant ownership and use rights or are stakeholders in some other capacity (including policy-implementing organisations)? What is the structural inclination to co-operate among actors in the *network*? Are their ‘coalitions’ formed across social positions? Are there actors among them who operate as process brokers or ‘policy entrepreneurs’? What is the position of the general public versus experts versus politicians versus implementers?

##### *(3) Problem perception and policy objectives*

What and why? – Multi-faceted

What are the dominant maps of reality? What is seen as a problem and how serious is this considered to be? What do people see as the causes of the problem? Is the problem considered to be a problem for individuals or a problem for society at large? Why are the previous questions seen that way: what values and other preferences are considered to be at stake? Which functions are allocated to the sector? Is the problem seen as a relatively new and challenging topic or as a ‘management’ topic without much political ‘salience’? To what degree is uncertainty accepted? Where are the recognised points of intervention? What relations with other policy fields are recognised as co-ordination topics? Which policy objectives are accepted? What are levels to which policy makers aspire (ambition) in absolute terms (level of standards) and relative terms (required changes in society)?

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<sup>3</sup> Such brokers could also be labelled “boundary spanning” people. Calling them “intermediaries” is right to indicate the role that they play, but might be misleading as it seems to indicate a certain type of persons or organisations, instead of for instance a powerful hierarchically “higher” authority that chooses itself to play such role.

*(4) Strategy and instruments*

How? – Multi-instrument

Which instruments belong to the policy strategy? What are the characteristics of these instruments? What are the target groups of the policy and what is the timing of its application? How much flexibility do the instruments provide? To what extent are multiple and indirect routes to action used? Are changes in the ownership and use rights within the sector anticipated? To what extent do they provide incentives to ‘learn’? What requirements do they place on the availability of resources for implementation? How are the costs and benefits of the policy distributed?

*(5) Responsibilities and resources for implementation*

With what? – Multi-resource-based

Which actors (including government organisations) are responsible for implementing the policy? What is the repertoire of standard reactions to challenges known to these organisations? What authority and other resources are made available to these actors by the policy? With what restrictions?

This concept of governance was previously a/o. also used extensively in an EU 5<sup>th</sup> framework study on changing regimes for water management in Europe (“Euawareness” – see Appendices 4a, 4b and 4c for more backgrounds and specification). The research model that was used in the that study is represented below. The main idea was that when regimes (compare the *structural context* in figure 12) become more integrated (in terms of *scope* and *coherence* of its elements) this enlarges the chance for more sustainable resource use.

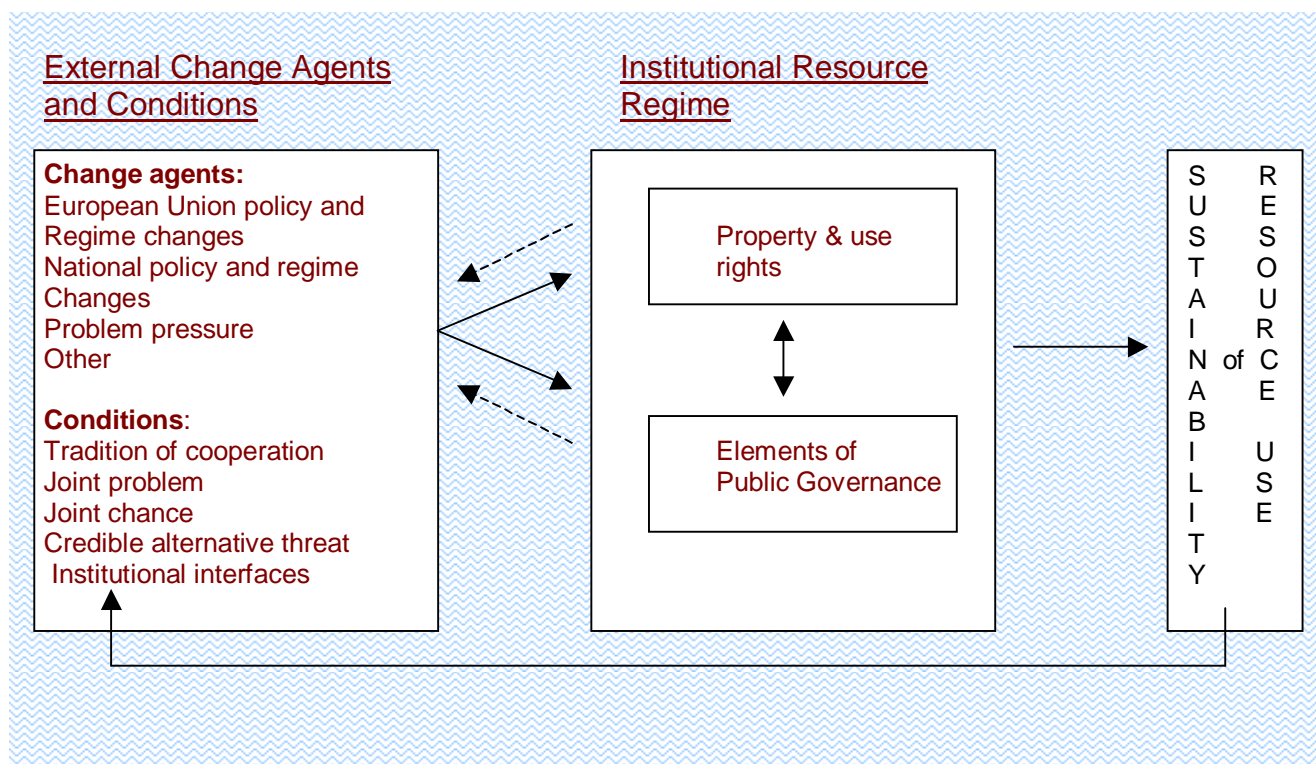


Figure 13, Central research model of the Euawareness study

This figure might cause some confusion when compared with the above model of layers of context factors. The “change agents” of the Eawareness model can be regarded predominantly as a selection of aspects of the wider contexts in terms of figure 12. They were selected for pragmatic reasons without additional theoretical considerations. The “conditions” that are mentioned in the left box of figure 13 can be regarded as specific aspects of the *structural context* at time 0 that influence the process that leads to the change of this context in later phases. They were selected on the basis of other studies on conditions for successful cooperation, like the successful formulation and implementation of environmental negotiated agreements. The ‘tradition of cooperation’ is an aspect of the *network* relations, the ‘joint problem perception’ of the perspectives on the problem, the ‘joint chances perception’ of the related goal ambitions, the ‘credible alternative threat’ of the relationship between levels and the responsibilities for implementation and the ‘institutional interfaces’ contain various issues that relate to the structural and wider contexts.

For the way change agents, or perturbations, do or do not “succeed” to change the governance regime, Appendix 2, at pages 10-18, emphasizes that although nowadays most attention is paid to the cognitive perspective (cf. e.g. Fischer and Forrester 1993, see also Howlett and Ramesh 1998), a balanced approach should include a motivational and resource / power oriented perspective.

#### 4. Types of boundary judgments

To enable (European policy) innovations to be integrated in coherent governance and ultimately to be fully used or complied with, *boundary judgments* should be both sufficiently similar among the actors involved and sufficiently flexible. There is an optimum here. Too much consensus on the boundaries of the domain might shut out new information from outside the specified domain that poses challenges that could have been better integrated in time. So it decreases instead of increases the resilience of the regime. Too much flexibility could lead to so much changeability and flux that it frustrates joint action and in this way decreases the resilience of the regime and its capacity to fully respond to the (policy) innovation.

In an earlier publication on dealing with uncertainty on both problems and solutions in sustainability matters I showed that there is no escape from “learning while doing” and that the contexts to stimulate such learning requires and “uneasy marriage” of both sufficient openness to let new disturbing knowledge and challenges in and sufficient capacity for consensus building or at least accepted decision making (Arentsen, Bressers and O’Toole 2000, cf. the participative and integrative political system capabilities of Jänicke 1997: 18). Emphasis on one extreme is detrimental for the sufficiency of the other. The same optimization is required here.

But having said this: what kind of boundaries are we talking about? Where do they play a role? When I relate the last question to figure 12, I can discern at least three places where *boundary judgments* are made:

- they are part of the cognitions of the actors involved in an interaction process, where they can be conscious and unconscious;
- they are explicitly or implicitly implied in possible specific inputs to the process (policy documents or project plans and the like);
- they are explicitly or implicitly implied in each of the five discerned elements of governance and in the property and use rights deemed relevant for the issue(s) at stake.

The dimensions that can be used to delineate the boundaries of the domain are specified in figure 14.

- A domain can be regarded as fitting one scale and therewith often also one level of relevant actors<sup>4</sup>, or alternatively more than one scale.
- A domain can be regarded as a relatively narrow bundle of relevant aspects or as wide as even encompassing several sectors that are often viewed as domains in their own right.<sup>5</sup>
- A domain can be regarded as stretching over a rather limited period or alternatively as a permanent evolution far into the future.

To illustrate the above with the example of a water management project:

- A local project to raise the water level of a bog, creating relatively wet meadowland between this bog and the next one, can be regarded as purely local, but also as part of a national policy to create an ecological infrastructure of vital and linked nature areas, or as implementation of European habitat protection policies. Actors and procedures that are regarded as relevant will differ accordingly.

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<sup>4</sup> Not always equivalent, think for instance of the river basin scale of the WFD that does often not coincide with administrative levels and actors.

<sup>5</sup> Note that while in Tigris the spacio-temporal dimensions were emphasized here also the sectoral dimension is included. (Tough Oxley and ApSimon (2006) recently also integrate subjects (sectors) in the spatio-temporal area, page 12 and figure 3.)

- The same project can be seen as a purely water management affair but also to include nature policy (quite obvious here, but still not always accepted), recreational and tourism policy, revitalisation of the rural economy, land use planning, etceteras. Actors and procedures that are regarded as relevant will differ accordingly.
- The same project can be seen in project terms with clear beginning and completion dates, or as an ongoing and permanent effort to improve the quality of the natural resource. Actors and procedures that are regarded as relevant will differ accordingly.

The three dimensions might not be unrelated<sup>6</sup>. The time dimension may for instance behave differently at various scale levels, with different speeds. Natural resource regime developments on the national level could for instance be best described in long periods of decennia, covering hundred years or more for the national level, while practical cases could be described in periods of years or even shorter periods, covering one or two decennia.<sup>7</sup>

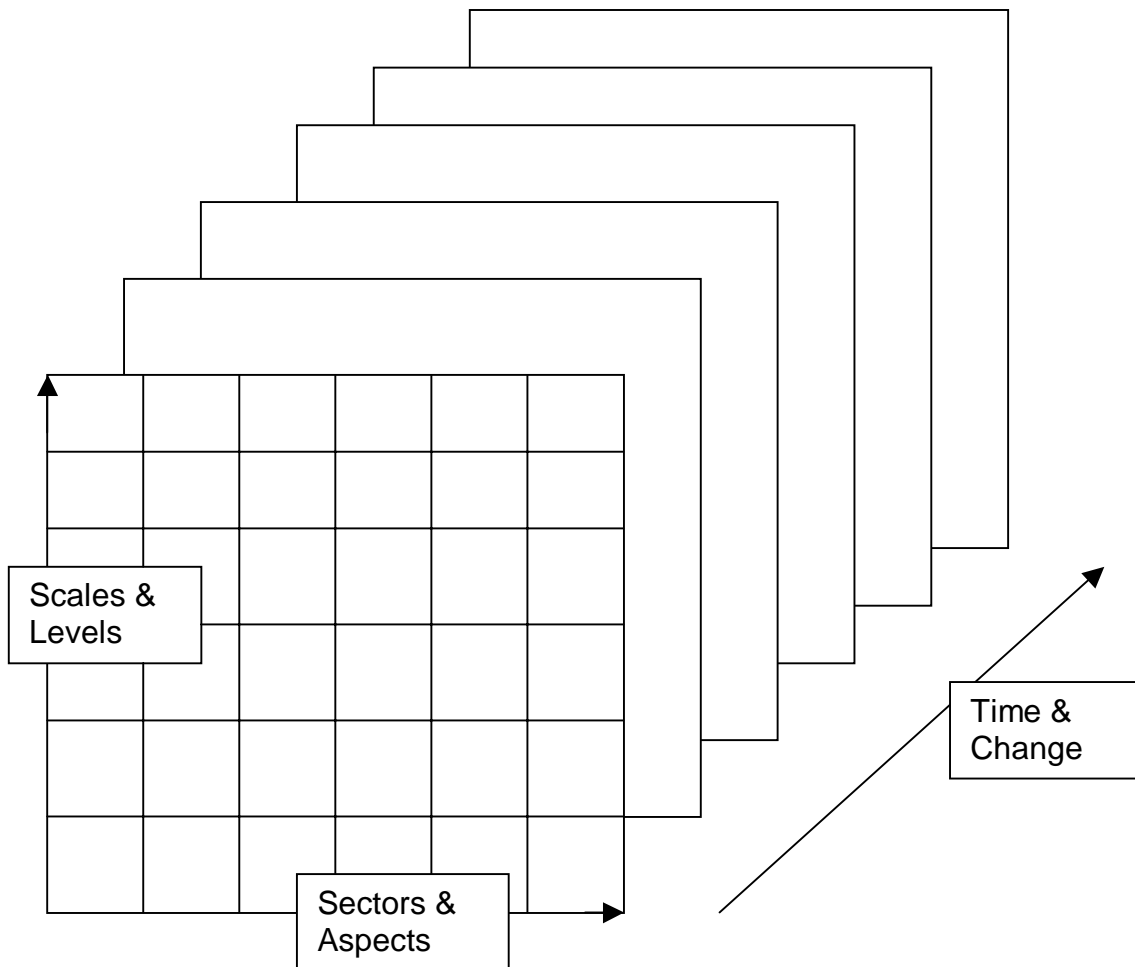


Figure 14, Three dimensions of sustainable development that require integration and are thus relevant for boundary judgments

Within each specification of scale, sector and time (so forming a tri-dimensional figure consisting of a certain combination of cubes in figure 14), a number of processes takes place. How many processes are included in this area depends of course partly on the

<sup>6</sup> Thanks to Roger Seaton to point this out.

<sup>7</sup> This is actually what we did in the Euawareness project. See appendix 4a.

degree of detail with which the analyst wants to discern them from each other (cf. figure 9). The resulting set of processes and elements is part of the infinitive fabric that ultimately covers all processes on earth. The included processes will always have relationships with other processes not included in the domain. Sometimes it might be worthwhile for the analyst to include some of these in the graphic, just to clarify the demarcation lines between what is regarded as the domain and what not. This is also true if not the domain specification of individual actors in the process or a joint understanding is to be represented, but just the specification of the area under study by the analyst.

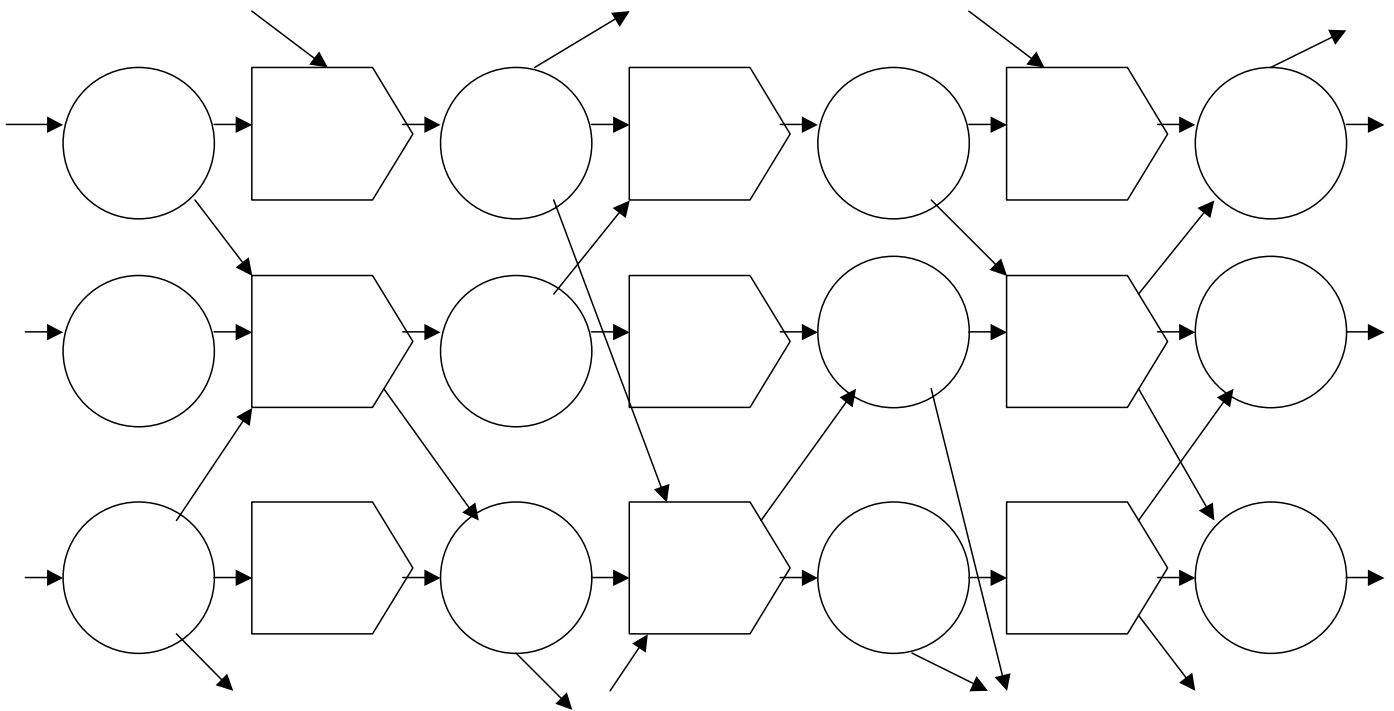


Figure 15, Multiple process model as part of an infinite fabric

In this “cut out” of the fabric of processes, there still can be different perceptions of the relevant domain and its boundaries and how to deal with it. It is unlikely that attention will be spread evenly. There are at least three ways to deal with the domain.

One can tend to concentrate further on a specific process. Then the rest of the domain is acknowledged but also regarded as just a context for what one really sees as the job to be done. This could be labelled an “operational” project of programme definition (and is actually quite common, both in practice and in implementation research).

A following way to deal with the processes in the domain could be labelled a “chain perspective”, in which also previous and follow-up processes are included, as worthwhile to pay attention to. Note that each specification of a “chain” has a degree of will, since there are also other line-ups imaginable. Acknowledgement of a chain also opens the possibility to challenge the serial character of it by wondering about the consequences of putting these more in parallel or even integration them in to a joint process wherein even more multiple issues and actors meet. The added *complexity* might be balanced by the avoided *complexity* of transitions from one process to another.

Only in the next way of dealing with the domain a more “integrative” perspective blooms, in which processes from various sectors, scales or time horizons are combined in the way the actors operate in the domain. Often this will imply a (partial) blurring of the boundaries between the processes. All these forms of integration are in need of “coupling

strategies” to enable the actors involved to handle the extended multiplicity of issues, procedures, actors etceteras. This is the more so when there is disagreement among actors and / or changes in time about this that may lead to adjustment problems in the processes involved. Section 6 will present some preliminary ideas on such management of processes under extended boundary judgements.

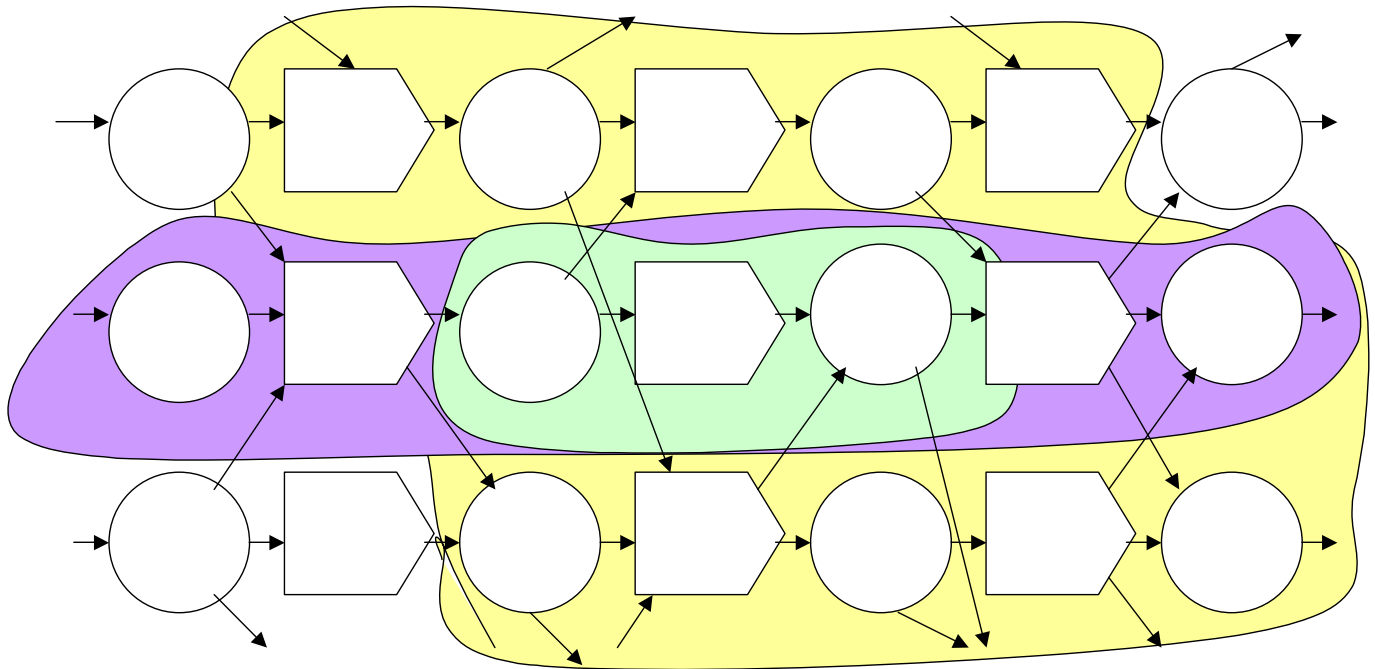


Figure 16, Domain boundary perceptions<sup>8</sup>:

*Green (light): operational project / programme definition*

*Lavender (dark): chain perspective definition*

*Yellow (very light): multi-sectoral (or -level, -time, -geographic space, etceteras) integrative definition*

<sup>8</sup> The application and further elaboration of Contextual Interaction Theory takes place at CSTM in the following water management projects where it is used in different degrees of intensity:

-The applicability of the theory in project-oriented multi-actors settings is tested by *Katharine Owens* in her project on wetland restoration in the Netherlands, Finland and the USA (green).

-The potential and complexities of blurring the boundaries between successive processes in the chain by implementing them in parallel rather than serial is investigated by *Jaap Evers and Wim van Leussen* (lavender).

-The potential and complexities of blurring the boundaries between various sectors by coupling them in singular projects is studied by *Simone Hanegraaff and Kris Lulofs* (with advice of *Stefan Kuks*) (yellow, sectoral boundaries interpretation of the figure).

-The potential and complexities of blurring the boundaries between adjacent geographical units (like countries) by joint policy making is studied by *Kris Lulofs and Frans Coenen* (yellow, spatial boundaries interpretation of the figure).

-The potential and complexities of blurring the boundaries between natural science knowledge on the one hand and social science knowledge and practitioners knowledge on the other hand in water management decision making processes is studied by *Mirjam van Tilburg and Frans Coenen* (with advice of *Stefan Kuks*) (not represented in this process-based figure).

-The common ground and links between these projects are studied by *Kris Lulofs and Hans Bressers*

-The ISBP project itself will study two water cases and a case in sustainable tourism, in which all forms of boundary issues are included, by *Valentina Dinica, Hans Bressers and Stefan Kuks*.

## 5. Studying boundary judgments and their impacts

### *Case selection*

The research proposal specified that the cases that are studied in ISBP (the empirical domain of the study) will need to have the following characteristics:

- at the interface of nature and culture
- somehow relevant for sustainable development
- where conflict is likely
- across spatio-temporal scales (which is relevant for subsidiarity).

To the last item I would like to add the cross sectoral dimension, for instance enlarging a certain project from merely one purpose or fitting in one policy scheme to encompassing implementing more, maybe even many, policy schemes or societal purposes.

### *Case study protocol*

In the Euawareness project we used a method for case analysis that is a fairly straightforward policy studies approach (see for a brief description Appendix 4b, page 52-53, and for a more elaborated description Dente, Fareri and Ligteringen 1998). For ISBP the following steps could serve to analyse a case (take it just as an example how the concepts of this report could be put into use):

1. *What is the issue / are the set of issues the researcher wants to focus on?*

This is a pre-choice question that is a necessary starting point that cannot be derived from empirical observations. In ISBP it could be a/o. linked to a certain (European policy) innovation.

2. *What elements and processes are discerned initially around this focus? What are the actors involved in these processes?*

Remember that the boundaries of the research domain should be sufficiently flexible to enable an open view of the boundary judgments of the actors involved. Nevertheless it is possible to sharpen focus on a certain process before entering the next step.

3. *What is the "story" (or stories) of the case?*

This is obvious the descriptive part of the case study where the historical sequence of developments that the researcher deems relevant is described.

4. *What were the relevant motivations, cognitions and resources of the actors involved? To what extent and how do these factors explain the course and results of the process?*

5. *What is the role of boundary judgments in these factors and the process?*

See the data collection check list below. Boundary judgments that differ among actors can cause incoherence and can even be a source of conflict. Boundary judgments that are too narrow for the adequate use of the innovation or so wide that complexity becomes unmanageable can also stagnate all progress.

6. *What is the role of the receptivity of actors involved in these factors and the process?*

The role of receptivity in the process as a whole also refers to the receptivity of the set of actors as a *network*.

7. *What was the interaction with the structural context and / or the wider contexts, like the cultural context?*

8. *To what extent did one or more actors use specific strategies to manage the boundary judgments of themselves or other actors and / or to cope with differences and perceived too narrow or too wide scopes in order to enhance the degree of coherence of the process and its structural context? To what effect? What lessons could be drawn from this for other situations and with what specifications of conditions?*

This last question reflects the ultimate “how to” nature of the questions that were stressed in the Stockholm meeting and mentioned at the start of section 1 of this report. In section 6 some preliminary thoughts about such strategies will be discussed.

#### *Case study comparison*

For ISBP the case comparison method might be very relevant. The variation of different sub-projects is quite large and keeping all the advantages of this wide scope while enabling some comparison will be a challenge of this project. In Ewareness we used a method for case comparison that enables to build a data matrix on the basis of rather different case studies (and from different theoretical perspectives). The basic idea is that from a certain theoretical perspective a short questionnaire is developed that asks to assess a number of variables on ordinal (e.g. five point) scales and to indicate which observations (in brief) gave reason for this assessment. The respondents are the case study researchers themselves. Good explanation to the case researchers / respondents of the meaning of the variables and the “key facts” listed that enable to check the understanding by the respondents of the variables, create a reasonable degree of validity of such answers. This method does not require that all case studies have emphasized the same phenomena or used the same methodology. Only that the subjects of the variables indicated are sufficiently covered by the researchers in reading documents and having conversations with insiders that they can make a fair assessment of these variables for their case, even when these variables were not the core of their own perspective. More on this method you can find in Appendix 4b, pages 52-55. The data can not only be used for qualitative comparisons but also for simple correlations and graphs, see Appendix 4c. As the envisaged case studies in the ISBP project are quite diverse, this might be a good method to enable cross case analysis from one perspective (or maybe even from more than one perspectives in different case comparison analyses!).

#### *Data-collection and classification tool*

An important aspect of the ISBP study is the way in which *boundary judgments* influence and are influenced by interaction processes in the case studies. In our terminology, *boundary judgments* belong to the “cognitions” of the actors involved (or in solidified form in policy documents and other governance elements). If we see *boundary judgments* as a form of information we can possibly use the “check list” in the following data collection tool.

With the help of the CIT model (see figure 11) we can discern 10 points of observation when investigating the way new information is used in actual interaction processes. While this scheme is somewhat elaborate to be used for “real-time note taking” during e.g. observations of meetings, somewhat simplified versions prove to be useable. And with the help of tapes and additional information from the observation these notes can be later “unpacked” to fill the observation tool for research purposes. This list of attention points is used in water management research, so the terminology has to be changed “*mutatis mutandis*” for other purposes. In this translation from Dutch I used the 4 A terms of the *receptivity* model where they fit (Jeffrey and Seaton 2003/4).

1. (*the ‘information’ brought forward*) Which different pieces of information are presented and how is this done? What is – for each important input – the form of this information (reports, other written sources, oral communication, other forms)? What are the topics of the information (water system, other natural science or technological subjects, behaviour, goals, perceptions, resources of other actors etceteras)? Who is presenting the information (by civil servants of the water authority, by administrators, by other actors that participate in the decision making process, by actors from outside the process – are they research and consultancy people or ‘laymen’? Are there other relevant characteristics of the presented information?

2. (*processing per actor – awareness / observation*) To what degree is the information observed by the different actors (intensive, for instance read fully, or average or even going in at one ear and out at another, or simply not at all)?

3. (*processing per actor - association with existing frames of reference*) What indications are there that information (apart from whether it fits good or bad with own interests) is better or worse associated with, because it connects with (possibly: gets into dialogue with) already existing patterns of thinking? Or alternatively that the information is not associated with because it does not connect with existing ways of thinking.

4. (*processing per actor – acquisition in own interpretations*) In how far and to what degree is the information absorbed in interpretations that the actors bring in the process? Is there a lot that is left aside? Is there a lot of simplification in the 'one-liners' that summarise the information in communication?

5. (*direct influence on course interaction process - application*) What role does the thus filtered information play in the course of the interaction process, especially with the image formation of the possible options and their pros and cons? To what extent one speaks in terms of knowledge (this is how it is) and to what extent in terms of motives (this is what I want) or power (this is how it should be, otherwise I'll resist)?

6. (*influence of process on information processing*) To what degree and in what ways does the course of the process itself forms a change factor for subsequent ways of observation, for frames of reference or the interpretations themselves?

7. (*indirect influence via the strategic value of information*) To what degree and in what ways are the inequalities in the access to information and the capacity to understand it used purposely in the process?

8. (*influence of capacity and power on information (processing)*) To what degree gives the already available knowledge, experience, education, size and quality of staff, prestige, authority etceteras a head start with the awareness, association, acquisition or application towards own interest of information?

9. (*indirect influence via the perception of (de)motivating chances and threats*) To what degree and in what ways does the filtered information (interpretations) change the motivations of the actors involved?

10. (*influence of motivation on information (processing)*) To what degree does the attention of the actors seem dependent on the saliency of the subject and the contents of the information to what they see as their interest (selective perception)?

## 6. Strategies for managing boundary judgments

The “boundary problem” that forms a challenge for “integrative systems” calls not only for scientific study but also for practical solutions. In cases of policy innovation often the boundaries of the domain at stake are enlarged or need to become more flexible and thus uncertain. Enabling this – while keeping enough cohesion to be able to create legitimate decisions and actions – might require:

- a good balance between pluralism and consensus-seeking (avoiding extremes);
- optimising the receptivity of the actors involved (enabling synergies).

In our study we will look at ways in which actors have tried to achieve these and thereby “manage” the boundary problem. To illustrate this and also give an example of a case where boundary issues certainly play a role I will present briefly the case of “the Breakthrough” in the Netherlands. The case will probably also be elaborated further as one of the cases of the Dutch team later in the ISBP project. This brief description is based on work with Simone Hanegraaff on the basis of a/o. a workshop at the waterboard with also many of the other actors involved represented.

Let’s first explain the name. While ‘the Breakthrough’ (in Dutch ‘de Doorbraak’) can mean a scientific discovery in both languages, here it has to be taken quite literally. In the past interventions in the water system have in many regions disrupted the natural systems of brooks, streams and other water courses (Huitema and Kuks 2004). With the purposes to re-join the creeks of part of the region to the main watercourse basin system and also to enable the separation of rural (rain) water and urban (treated sewage) water the plan was developed to create a new, 13 kilometres long, watercourse. In subsequent phases to these purposes new ones were added, *each of them implying enlarged boundaries of the problem domain and adding new actors, resources and procedures*: safety against flooding, connecting nature areas to be part of the national nature system (this extension actually transferred the lead from the waterboard to the province and widened the projected water and flooding area from 25 to 75 meter), buffering between a new regional industrial estate and municipal residential districts, rural renewal (reallocation of land and socio-economic development plan), emergency water storage and – for the time being – finally, recreation.

The array of aspects includes levels from the EU (e.g. Habitat, recreation subsidies), national (e.g. national nature system, national administrative agreement on water – predominantly emergency water storage), provincial (took over the lead because of nature development component), regional (e.g. the geographical area of the waterboard and the regional industrial estate), local (e.g. residential districts) up to the level of individual farms and gardens. The array of aspects includes sectors like – next to various aspects of water management – nature policy, agricultural policy, and tourism, and has recognised interaction with industrial and urban development. The time horizons of objectives and resources (e.g. requirements for subsidies) for all these aspects are very different, creating much stress for the process. Nevertheless the project is developing reasonably well and is actually being build while the detailing of the planning is still continuing. In 2014 it should be ready. Now how does the waterboard cope with this? Here is some practitioners wisdom. The many strategies mentioned can be grouped into five categories.

### 1. *Know your environment well*

Get to know what are the plans and agenda’s of other governments on various levels. Invite yourself to consultations on the preparation of projects and policies at regional and provincial level. Learn about the stakes and interests of various possibly relevant private and public organisations, to facilitate later attempts to find and formulate joint interests and otherwise enable to show understanding and tact in negotiations.

### 2. *Invest in good relations in the network*

Who is relevant in the network is dynamic, keep track of that. Invest also in relations that might become important at a longer term (under uncertainty enable serendipity). Welcome initiatives by others to establish contact. Create surplus value: “You’ll scratch my back and than I’ll scratch yours”.

### *3. Fit up your own organisation for “coupling”*

Create an organisational philosophy that is oriented towards external cooperation. Adapt the staff composition and personnel policy: hire other types of people and give capable present staff the possibility learn the necessary competencies to this aim. This holds especially true for the project manager, who should be communicative, flexible and entrepreneurial. Have the project managers regularly visit meetings of each others projects, so hat they can learn from each other and from the enlarged variety of situations they experience.

As a representative of the organisation, give confidence that your proposals are backed up by the responsible administrators (which then should of course also be true when necessary). Be honest and open to the administrators about the risks of proposals, developments and the project as a whole – only then the support won’t fail after a first disappointment. This implies a ‘low threshold’ between the levels in the organisation. The staff should be somewhat acquainted with each others social networks so that problems can be solved through short lines.

Try to add resources, for instance by hiring a subsidy manager. Group projects in bundles or programmes in the long term financial projection so that a financial disappointment in one project can be compensated by good luck in another project, without disturbing the important long term orientation.

### *4. Engage consciously in adding complexity*

Note that new opportunities often come with new complexities. Do not couple to many controversial issues in one project. Be aware of the constituencies of actors, for instance do not have an agricultural representative organisation take co-responsibility for issues that are generally neutral or irrelevant to regional agriculture, but might be regarded negative by one or two individual farmers.

### *5. Show reliability, openness and determination during the entire process*

Commissioning an external independent process manager, who shows that it isn’t just a water project, can help in this respect. Avoid hiring own interim personnel. Take care that there is enough capacity attributed and responsibilities are given to the right person. Call in responsible administrators at strategic moments to prevent escalation by showing both determination and using his/hers short lines to other organisation leaders in the network.

Try to contain the risks of the indirect communication that always occurs when talks are held with individuals that participate on behalf of an organisation. Watch whether everybody does his “homework” properly and keeps his organisation well informed. Watch carefully whether the information is properly handed over when the representation of that (or the own!) organisation is transferred from one individual to another.

Create open communication towards the citizens with open access information markets and “kitchen table” conversations in stead of general slide shows for an audience with questions afterwards. The last strategy can be detrimental: the first critic sets the tone for the entire evening and the rest keeps silent because one doesn’t feel at ease. It’s a recipe for an “us and them” feeling. As far as projects are not fully integrative, try to combine with other organisations citizen communication about all various projects and developments in the same geographical area together, enabling citizens to get the whole picture. They are not interested in the sectoral boundaries!

The ISBP project will probably learn us a lot more on the relevancy of domain specification, the boundary judgment problems and boundary spanning strategies. And though “lesson drawing across time and space” needs a lot of caution (Rose 1993), I’m looking forward to find out !!

## Glossary

### *Boundary judgments*

(EU proposal) Definitions of systems and problems, that underpin conceptual models.  
(This report) Socially constructed definition of domain of policy fields (in terms of relevant scales, actors, problem aspects, solution-strategies, responsibilities and resources).

### *Coherence*

See Appendix 4b, pages 37-38

### *Complexity*

(This report) Complexity increases to the extent that the elements of governance can be characterized by multiple formats in most of their elements. A regime becomes more complex when more layers and scales are involved, more actors are involved, more perceptions of the problem and accompanying goals are involved, more instruments are part of the policy mix and more organisations share responsibilities for implementation.

### *Convergence*

(EU proposal) Process of harmonising local administrative and political institutions with the principles of sound governance.

(This report) Change of the governance structure (levels, networks, problem perceptions, strategies, responsibilities and resources, and property and use rights) towards more integration (both in terms of *scope* and *coherence*).

### *Extent (scope)*

The size of the domain of the regime, that is the uses and users regulated by one or more parts of the regime, relative to the domain that is relevant for the focus of the researcher, for instance the sustainability of a natural resource. Regimes with an insufficient extent are by definition weak as guardians of sustainable use, while some relevant parts of the domain go unregulated.

### *Networks*

(This report) Policy fields are networked contexts because policy-relevant actors (note the implicit boundary definition!) operate not as autonomous or atomised units, nor merely as parts of a larger, straightforwardly hierarchical array, but in a matrix on interdependence (Bressers and O'Toole 2005: 140). So the implicit assumption of this definition is that there is always a network of some kind, only the nature of it varies.

### *Policy brokers*

(This report) Policy brokers are actors that have process oriented goals rather than contents oriented goals, and for that reason are more concerned with for instance the speed and consensus of decision making than with the precise contents of the decision. This gives them some potential as boundary spanning actors.

### *Process*

(This report) The concept of "process" is here not used in one of its two common meanings ("change over time"), but in the other meaning of "conversion process" processing inputs into outputs. When the change over time is meant, it will be labelled change. Change can be produced by a process when the output is functionally equivalent to the input, but renewed in some respects.

### *Receptivity*

(EU proposal and this report) The ability of an actor to associate and exploit new knowledge around existing knowledge, activities and objectives.

*Structural context*

(This report) The structural context of a process or case story is formed by the regime that governs it, consisting of the elements of governance (levels, networks, problem perceptions, strategies, responsibilities and resources), and property and use rights.

*Structure – process constraints*

(This report) The structural context of a social interaction process poses various harder or softer constraints (but also opportunities) to the actors in the process. This has probabilistic rather than deterministic consequences. (See section 3 and Appendix 1).

*System*

The whole of discerned elements in a certain cut out of reality, so with certain boundaries, and the linkages between them, often processes in which certain elements are processed into others.

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(as far as not included in the appendices)

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## Appendices

The following appendices are listed with this report as separate files:

### Appendix 1

“Implementing sustainable development How to know what works, where when and how?”, Hans T.A. Bressers (2004), in: William M. Lafferty (Ed.), *Governance for sustainable development: The challenge of adapting form to function*, Cheltenham: Edward Elgar, pp. 284-318.

### Appendix 2

“What does governance mean? From conception to elaboration” Hans Th.A. Bressers and Stefan M.M. Kuks (2003), in: Hans Th.A. Bressers and Walter A. Rosenbaum (Eds.), *Achieving sustainable development: The challenge of governance across social scales*, Westport Connecticut: Praeger, pp. 65-88.

### Appendix 3

“Visions and synthesis from the policy sciences literature” Hans Bressers (2000), part of original paper for the conference “*The politics of sustainable development: Institutions across social scales*” (Gainesville: University of Florida) that was not included (fully) in the appendix 2 publication.

### Appendix 4

“*Integrated governance and water basin management: Conditions for regime change and sustainability*” Hans Bressers and Stefan Kuks (Eds.) (2004):

- a) 1. Governance of water resources, Hans Bressers and Stefan Kuks, pp. 1-22.
- b) 2. Institutional resource regimes and sustainability, Hans Bressers, Doris Fuchs and Stefan Kuks, pp. 23-58.
- c) 9. Integrative governance and water basin management, Hans Bressers and Stefan Kuks, pp. 247-265.