

New Strategies for Implementing Locally Integrated Stream Restoration Projects

Cheryl de Boer and Hans Bressers

CSTM - Twente Centre for Technology and Sustainable Development,
Institute for Innovation and Governance Studies, University of Twente, the Netherlands,
c.deboer@utwente.nl, hans.bressers@utwente.nl

Abstract:

Climate change has brought to the forefront increasingly urgent concerns regarding future uncertainties, adaptation and risk in many countries. Flooding risks in the Netherlands however have been a high priority for decades. The Dutch Water Boards and other interested parties (other governments, NGO's, local farmers and private citizens) are attempting to deal with this new perceived vulnerability by increasing the resilience of the natural system, giving more space to the water and integrating as many interests into the new projects as possible, thus building stability and sustainability into the resulting system. The adaptive management strategies used to achieve this are comprised of taking a very broad perspective on the interests considered as compatible, deliberate adaptive project design to take advantage of different opportunities for improvements and alterations at different areas of the stream. Based on an existing framework of important governance regime characteristics, we add focus on one newly defined important quality: flexibility. Having both flexible and coherent governance regimes enables projects to meet local requirements and work towards a sustainable situation by synergetic win-win situations, constructive and cooperative planning and implementation and the development of a high level of trust. The paper illustrates and concludes that natural system resilience is dependent on such factors for providing governance system resilience.

Introduction

The Netherlands is a geographically small and densely populated country. It has a land surface totalling only 41,546 square kilometres resulting in the longest distance possible to travel being 300 kilometres from North to South. The population of more than sixteen million people makes the average population density nearly 450 people per square kilometer. The Netherlands has become the poster country for commitment to developing flood management, risk reduction and awareness on a national level. In the eastern part of the country the historical approach to flood mitigation and management of investing in large-scale infrastructure projects is being reconsidered in light of an increasingly unstable climate, with forecasted increasing severity of water events. This new approach stems from an understanding that controlling water with manmade infrastructure has limitations that the new climate will put to the test and would require serious investments of a scale that are considered all but unfeasible to acceptably mitigate the risks.

Most of the east of the country belongs to the Rhine East sub river basin. Within this area the transboundary Vecht River is the draining vector for most of the surface before it flows into the IJssel River in the Rhine delta, just before it enters into the IJssel Lake. A main tributary to the Vecht is the Regge River that drains most of the Dutch region of Twente. In the past this river has been re-engineered and regulated among many others to provide faster drainage of farm land in the area and to make as much land available for human purposes as possible. Consequently, a water system has been created that not only lacks natural qualities but also the buffering capacity that is seen to be required by experienced and expected further climate change that will involve both more droughts and increasingly heavy rainfalls. A broader view on the functions of waters including their role for nature has gained wider acknowledgment and consequently, river restoration projects have commenced that are for a large portion in fact “undoing the past”. In this paper we examine the actions of the

Water Board of Regge and Dinkel and its partners in working to increase the flood storage capacity of the Regge River through renaturalization.

This paper will in its first two sections develop a number of issues being seen in dealing with climate change and various spatial planning and natural resource governance matters which have implications for the manner in which stream restoration programs are able to be successfully undertaken in the Netherlands. This context which is characterised as a dynamic and complex arena for implementation sets the stage for the adaptive and receptive type of strategies employed by the water governance stakeholders in the case study region. Following the development of these ideas we present the Regge restoration case where these strategies were studied which consists of a general summary of the larger stream restoration project and we then highlight as an illustrative example the specific actions seen to have taken place in one particular sub-project. After this illustrative sub-project we return to the general Regge restoration case to examine the various strategies and elaborate upon their ability to provide for improved policy implementation in this context. We further connect the flexibility of the regime to its impact on the ability of project implementers to fulfill their tasks.

Climate Change and Water System Resilience

Of the many expected, and already experienced, impacts of climate change, the Netherlands must be particularly adaptive and prepared for those related to the influence of more extreme peak and low water flows travelling along the various waterways. These concerns are not separate however from the more generally irregular and unpredictable weather patterns, attacks on flora and fauna resilience and the changing uses of land. In the next few paragraphs the relevance of these expected issues are explored and how they each drive the manner in which the studied stream restoration projects are undertaken.

Irregular weather

Certainly, one of the major consequences in Europe (and many other parts of the world) of climate change is the increase in the amount of and especially irregularities in rainfall and consequently river levels, causing higher peaks and more severe droughts. Storms have demonstrated weaknesses in water systems all over Europe in the past years as protection against river floods has become increasingly difficult to provide. In order to circumvent the excessive costs and situations which may become nearly impossible to manage through continuously strengthening dikes for the very occasional peak levels, while protecting concentrations of people and economic value, a new policy has been developed that attempts to reduce peak river levels by enabling controlled inundation. Warmer temperatures are already having a substantial influence on the behaviour and survival of the belts of flora and fauna, moving them further northward in Europe. The many resulting interruptions between the existing nature areas contribute further to the adverse effects being seen on biodiversity.

Buffering capacity: space for rivers

In the last one or two decennia there has been a remarkable paradigm shift in water management , following long periods during which this implied working against nature, to ensure 'progress' for mankind. Several European countries, including the Netherlands experienced floods and risky high waters, caused by rivers. Though further improving dikes and embankments has typically been the first response, it has also lead to a reconsideration of the basic underlying principles of water management. Instead of only containing rivers, the new paradigm seeks to make maximum use of opportunities to make nature an ally in the strife to stabilize water levels and prevent floods. In the Netherlands this new paradigm is accompanied by slogans such as 'space for rivers', 'living with water' and 'building with nature' (De Boer & Bressers, 2010). The predicted further

increase of irregular rainfalls caused by climate change on the one hand, and the emphasis of the European Water Framework directive on respecting ecology and natural river basins on the other have contributed to this paradigm shift in water management.

There is a price however that is associated with working *with*, rather than against, nature to ensure human purposes, which is especially relevant in densely populated countries like the Netherlands. This trajectory almost invariably requires a lot of space to be set aside and accordingly so, part of the reason behind the creating of 'unnatural' interventions in the past was precisely the 'rationalization' of the need to "better" use space. Working with nature also poses new challenges to the field of spatial planning. Spatial planners are as such not unfamiliar with these kinds of challenges. Many see the integration of various spatial claims into productive neighbourships and even multiple uses of the same area as their core business. Water managers then, do not want to come by at the eleventh hour to be integrated alongside the already previously included interests and purposes. Ideally, they seek to have the water system as the guiding framework, with water regulations and policies backing them in this claim. Of course, realities are more complicated and powers are sufficiently imbalanced to result in complicated processes within and around each project with which the new innovative paradigm is to be put into reality.

Natural greenbelts

Re-creating more natural rivers by giving them back a wide floodplain and the opportunity to meander creates great opportunities for nature development. With clever engineering is it also possible to create much of the buffering capacity required for flood control. Currently the majority of nature restoration activities in the Netherlands including the development of corridors of passage take place in conjunction with the National Ecological Network (EHS – Ecologische Hoofd Structuur). The EHS is a network flowing throughout the Netherlands that contains natural areas that are protected from expansion of other activities such

as campsites, agricultural business and of course urban developments. The idea was initiated into the Netherlands political sphere in 1990 as the term 'ecological' was introduced in the Nature Policy Plan by the Ministry of Agriculture. This program recognizes that as climate change causes flora and fauna belts to move northwards, reducing fragmentation by having viable corridors of passage is essential for the resilience of the ecological system. Most of the financing for these activities originates at the national level though it is filtered mostly down to the provinces for implementation. To highlight the order of spending seen we can say that of the total budget for investment in the countryside (4 billion Euros) nearly two thirds is set aside for restoration activities (Slangen et al. 2008). A version of the EHS was further picked up to inspire the Natura 2000 initiative at the EU level. Given that the Netherlands is a very dense, populated and ecologically fragmented country the governmental agencies are now giving a significant amount of importance to linking the areas of ecological importance to make the most use of the valuable biodiversity that can result. Desired nature development is thus generally promoted in the context of completing the National Ecological Network by its 2018 desired completion date. In addition to the provincial implementation role, the municipal authorities, water boards, nature conservation organisations, civil society organisations, farmers and private parties are also all involved in the process and completion activities. The future of these developments is however becoming politically unstable due to the desired cutbacks of current governmental initiatives.

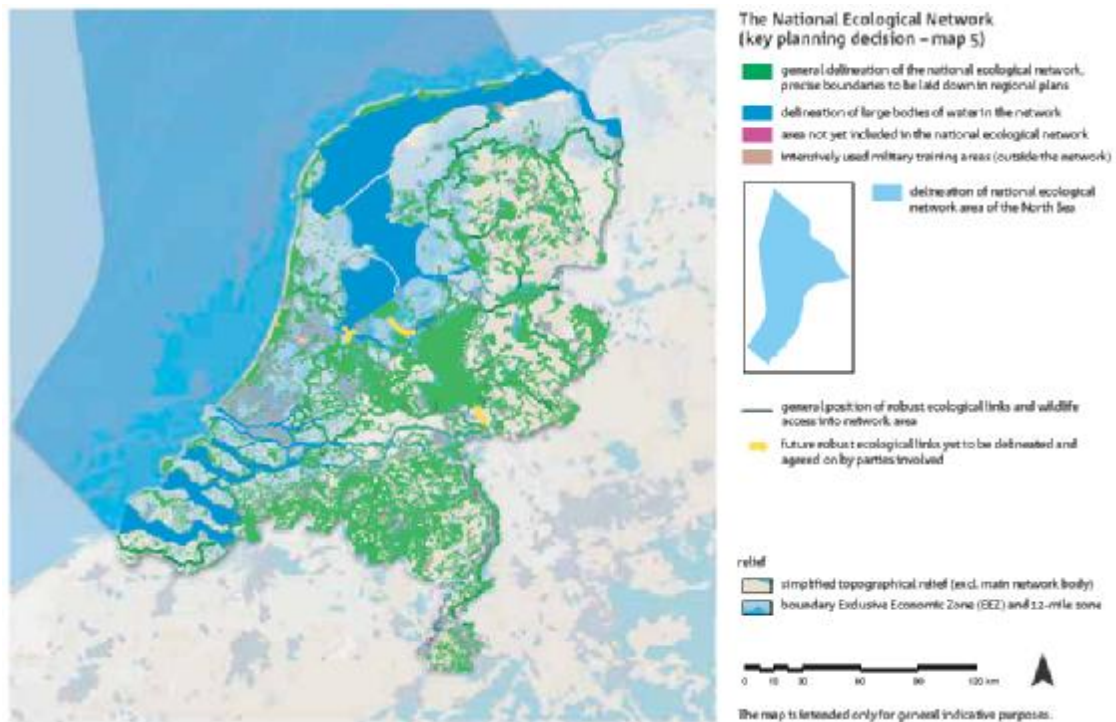


Figure 1, Nature Conservation in the Netherlands (Source: Ministry of LNV, 2005)

Multifunctional land use

In a densely populated country like the Netherlands, it was already in 1977 that the national government policy document Agenda for a Vital Countryside, noted that the character, use and appearance of the Dutch rural area are all undergoing change. Of particular note is that agriculture is no longer the main occupation or main economic base of the areas however it does still dominate the overall land use. Industry is increasingly attracted there (including retail, transport, leisure companies, commercial and public services) and the traditional dividing lines between urban and rural are fading. The perception of countryside is changing from one of a physical space for food production to a space to be used for consumption and contains authenticity, naturalness and quality for all Dutch citizens, not just rural dwellers. It is also very difficult to generalise across the

various rural areas in the Netherlands as they are becoming increasingly connected to the urban areas and have as such a variation of policy challenges (OECD 2008). All of this has had a great impact on land use in the Netherlands. The countryside can increasingly be seen as a form of “New Rurality” indicating that the functions of agriculture are more and more mixed with nature, recreation, landscape, education, rest areas for day care centres, etceteras (De Boer and Bressers 2010). Consequently, the river restoration projects which take place in these areas, have chosen to strategically combine not only water quantity and quality objectives and nature protection and development goals, but also spatial planning, agriculture, revitalization of the countryside, recreation and tourism, economic diversification, development of and providing buffering capacity to new residential and industrial areas and infrastructure, environmental protection and ecological education, as well as the cultural history of the area. Consequently numerous laws, regulations and public and private actors with their different interests need to be considered in the various stages of the implementation process. In principle this combination can be achieved either by conflict or cooperation. In practice, in most of the cases witnessed the mutual dependencies are so large and the potential benefits of synergies between many (but not all) of the goals involved so luring that the successful part of these projects can be studied as showcases for managing cooperation.

In a time where the country is finding itself making difficult decisions on both economic and environmental issues, there is a danger that these projects will be undervalued compared to more traditional methods that could enable more intensive development which is perceived to have stronger short term economic benefits (and reduced state costs). Our findings suggest however that the new approach to flooding management, project development and implementation has many advantages in this densely populated country that should not be underestimated. Spinoff economic benefits and increased quality of life and environment are strong benefits of this approach.

Section Summary

In this section we provided some backgrounds of the main drivers for river restoration projects in the Netherlands and their relation with the resilience of the natural system towards climate change. It was shown that in addition to the main drivers the projects ultimately need to reckon with a complex and dynamic set of public and private interests and the associated rules and actors. In the next section we will elaborate on this and show that not only the natural system, but also the governance system requires resiliency characteristics and explain what qualities make up such resilience.

Complex Implementation and Governance System Resilience

Complex and dynamic nature of issues involved

Renaturalization cases can be classified as typical 'boundary spanning projects', in which complexity arises from the fact that not only the context, but also the projects themselves need to be multifunctional in order to have any chance of being successful. Consequently the regime involved, is not only the regime regarding a specific activity, but the "inter-regime" regarding many activities, even when the starting point is just a singular issue such as flooding management, habitat restoration and/or water quality.

The projects are also typically multi-level by nature. Classic decentralization concepts (including the European 'subsidiarity' and the American 'new federalism') search for the "right" level of regime affiliation: the lowest one that is apt for solving problems. Multi-level governance is based on the acknowledgement that all levels and scales influence a certain situation simultaneously (though probably not to the same extent) and that all levels influence each other, not just top down and bottom up, but also often skipping some steps in between (Bressers and Rosenbaum, 2003). Though the projects studied in this piece of research work are by nature local, the abundant relations

with upper (including the EU and world climate change) and lower (kitchen table conversations with individual citizens) levels are at centre stage.

So inevitably projects of larger size and ambitiousness such as the Regge river renaturalization are “complex”, but moreover they are also dynamic. The period over which they are implemented is inherently lengthy and so there is ample room not only to “play the game” in terms of policy implementation, but also to try to continuously modify the context of the game. Analysis of the processes involved thus needs to be concerned additionally with the aspects that are not only understanding the resulting process, but also how its contexts evolve.

Thus the attention given to studying the water and nature restoration projects is channelled through these aspects towards the analysis of multi-policy implementation in complex and dynamic social interaction processes. When one studies the renaturalization processes these (inter)actions of the actors involved form the main portion of the story. They are also theoretically highly relevant for our analysis as we take our main concepts from *Contextual Interaction Theory* (Bressers 2004, 2009, De Boer and Bressers 2011). Given that the processes operate in a complex and dynamic, and thus unpredictable and uncertain environment, so-called linear project management is hypothesized here to be a recipe for failure. To be able to succeed in integrating multiple publicly and/or socially legitimate and desired uses, multiple actors’ consent, sectoral policy schemes, funding rules, time frames and scale issues, the project managers or even all members of project teams need to be skilled “boundary spanners”, able to see, use and sometimes create “windows of opportunity” (Kingdon 1995, Zahariadis 1999). Consequently the (inter)actions are not only valuable for developing the case specific narratives, but are also highly informative on what strategies are being used to achieve good results under various contexts. For this reason, the characteristics of the actors in these implementation processes are a vital part of the study. This includes how the actors are influenced by on the one hand regime characteristics and on the other hand the strategies they or others in the process apply to make the most of these contexts.

Adaptive implementation strategies

Most scientific research on the success and failure of complex spatial projects and policy implementation in complex situations in general, concludes to the importance of 'adaptive implementation'. Reality is not seen as a field of obstacles, but as a terrain of potential and often unexpected opportunities where the adaptive behaviour is focused on incorporating each "window of opportunity" in achieving the chosen objectives. In these cases the possibilities for complex multifactor causal developments are so huge that results often appear to be just "coincidental" which can at times be more appropriately labelled as "emergent" (Van der Walle & Vogelaar 2010). The exaggerated time requirement and resulting complexity of river restoration is in this perspective seen to provide additional opportunities. At the same time, the dynamics of the actor characteristics during the process cause the settings for the interactions to change and within the course of the entire project, there is ample time for strategies deliberately pursued by the actors to achieve such change. These (inter)actions of the actors deserve ample attention, in order to extract from them the productive strategies of dealing with complex and dynamic settings.

Adaptive management under these conditions has been seen to result in a number of various strategies. These strategies can involve more than just the motivation, cognitions and resources of actors concerning the issues at stake. They can also try to change the specific context of the process. From the perspective of the actor who is making use of them they can be labelled *external strategies*. These strategies can be undertaken as a response to unsatisfactory processes, though in the case of experienced actors they can also be primarily preventative in trying to avoid an unproductive setting before it arises. In these cases the actor fears that their perception of a productive future situation is in jeopardy based on any number of factors that are seen to set the context for the process to come. For instance, sometimes it is possible to bring in new actors or exclude existing ones or try to redefine the process and its issues at stake

differently to shift it to another institutional arena with a (partially) different governance context (see for an elaboration Bressers and Lulofs, 2010, pp. 27-30). Some examples of this are:

- adding new actors
 - o in addition to adding external actors such as policy brokers into the process, a strategy can be “inviting oneself” to consultations among other actors on new plans, or generally building relationships with and interacting with potentially relevant actors even when no immediate issue is calling for attention (strategic networking)
- creating new arenas
 - o by adding new meeting points such as choosing a certain legal format for the process when possible or by installing committees;
- creating new cognitions
 - o can be done through introducing or obtaining new information, spreading information and perceptions with new catchy key words and metaphors, involving the media and so on;
- creating new motivations
 - o by creating salience among others by using resources to entice participation or by using intermediate results to promote interest;
- adding new resources and power bases
 - o examples could include exchanging relatively flexible resources (like money) in advance for relatively fixed ones that may be hard to acquire when and where they are desired, like land ownership.

The above descriptions refer to how the actors attempt with external strategies to improve the context in which they are acting to better enable the development of their desired outcomes. Alternatively, some strategies of dynamics can be applied to the actors themselves who internally, prepare themselves better to participate in and make positive gains from the external games in which they participate. Such internal strategies are characterised here as attempt to

increase their receptivity. Jeffrey & Seaton (2003/4) coined the term receptivity and described it as 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 come in”, by opening and regrouping understandings to incorporate the new knowledge. Thus, receptivity should not be interpreted as a form of passiveness or weakness but rather be seen as a form of alertness and openness towards the contexts that enable well targeted innovative and adaptive action by self-confident people and organizations.

In this paper we expand the concept of receptivity even somewhat further to “*the ability to combine new information with existing cognitions, to recognize new goals as matching existing motivations or the values behind them and to recognize the opportunities of new resources or combinations with existing resources to optimize their capacity and power*”. A greater likelihood for a more productive interaction process might result from an increase in such receptivity (for an elaborated example of how various combination of cognitions, motivations and power and resources deliver these more productive interaction processes see Owens, 2008). Receptivity tends to play a major role in recognizing the opportunities that an enlarged domain perception (what and thus who belongs to the issues at stake in the process) might have to enable the creation of synergies with the activities of other actors. If potential synergy is perceived by both parties, in that they see joint chances in cooperation, boundary spanning strategies are more likely to create productive linkages (Bressers and Kuks, 2004, pp. 259–262).

The receptivity of an organization is in itself not entirely fixed and can thus be altered in the course of time by external factors and deliberate *internal strategies*. This is important to consider particularly for an organisation which has an organizational philosophy that it is oriented towards external cooperation. Project managers within this organisation who are communicative, flexible and entrepreneurial should be rewarded. This could be witnessed through regular visits to the meetings of others’ projects, which enables learning from each other

and as well from the enlarged variety of situations they cumulatively experience. Support, which results in high transparency shown to upper level management regarding the risks inherent in innovative and progressive project proposals should be inherent in the corporate culture.

Supportive governance settings

Furthering the understanding of the connection between the success of these receptive organisations and adaptive implementation strategies and projects we turn our attention to the elaborate social science literature regarding the degree to which regimes support sustainable natural resources management. Ostrom (1990, 1999) emphasises the role of property and use rights and how they can provide the necessary incentives. Knoepfel (Knoepfel, Kissling-Näf and Varone 2001, Knoepfel, Narath and Varone, 2007) regards the relevant regime nevertheless as a combination of property rights and public policy measures. The conceptual understanding taken here begins with the premise of the regime characteristics of extent and coherence as being relevant for natural regime management. The *extent* refers to the completeness of the regime in terms of which important uses and users are left unregulated. The *coherence* is the degree to which the various elements of the regime are strengthening rather than weakening each other. In Bressers and Kuks (2004) these qualities were applied to the five elements of governance (rather than public policy) that they discern, being: a multiplicity of relevant levels and scales, actors in the policy network, problem definitions and resulting goal ambitions, instrument mixes, and lastly responsibilities and resources for implementation (Bressers and Kuks 2003). Doing so, the extent and even more so the coherence of and among these was proven to have a major impact on the sustainable development of the water bodies in 24 cases.

The previously described use of adaptive strategies to influence not only the course of the process itself, but also in turn its setting has implications for the relevant regime qualities. While extent and coherence are the most important

regime qualities in more or less steady state situations or in situations where one wants to compare the before and after situations of resource use, it is proposed here that in a highly dynamic process situation in which success depends on quick and timely adaptive action, also the flexibility of the regime is an important influential quality. The level of flexibility indicates to what degree the relevant actors have formal and informal liberties and stimuli to act in an adaptive way. Further, as a fourth quality the intensity of the regime can be characterised as how strongly these actors are encouraged to concentrate their actions in the direction of sustainability. Governance regimes that have sufficient extent and coherence and adequate intensity and flexibility can be regarded as robust and thus “resilient” governance systems.

Flexibility: space for adaptive implementation

Flexibility is more precisely defined here as “the degree to which the regime elements support and facilitate adaptive actions and strategies in as far as the integrated (a/o. multi-sectoral) ambitions are served by this adaptiveness”. Consequently it is also the degree to which hindrances for such adaptive behaviour are avoided. The addition “in as far as ...” is needed to discern implementation that is just weak from a genuine attempt to make the most of the situation. Otherwise, when it is merely extensive discretion and self-reliance for implementers it can lead to fragmented and weak implementation. The term “integrated (a/o. multi-sectoral) ambitions” refers here to the integrated multi-functionality of land use.

Upon subjecting the concept of flexibility to a regime through the scope of the 5 elements of governance, a regime is *more* flexible in as far as (1) the relationships between the levels and scales involved are more based on decentralization of power, without upper levels withdrawing from support. This is closely related to empowering rather than controlling relations, and thus on trust. A similar feature describes flexible regimes in terms of (2) actor relations in the policy network. Here the combination of giving leeway to each actor group to

optimize its contribution to the whole program while still viewing the program as a joint effort qualifies as flexibility. In terms of (3) general problem perception and goal ambitions flexibility implies that these in their variety are not only integrated into a sort of common denominator (like with coherence), but also that these mixtures are allowed to differ in emphasis according to the opportunities of the context in the various situations. This implies some acceptance of uncertainty and openness to emergent options, which again relates to trust. The (4) instrument mixes are more flexible in as far as means from different sources (like public policies and private property rights) may be used as well as indirect means (here relating to opening or improving options for the use of means that more directly serve the goals) are available and allowed to be used. Lastly the flexibility of the organization of the implementation – (5) responsibilities and resources given by the policy program(s) – can be measured by the discretion to pool resources like funds and people with those of others to serve integrated projects and to be held accountable on the basis of the balanced virtues of the achievements (as in an integrated project), rather than on the basis of separate performance criteria.

Intensity: real incentives towards sustainability

Further elaborating on the concept of intensity, which is defined more full here as “the degree to which the regime elements urge changes in the status quo or in current developments”. The “amount of change” is thereby measured in analogy with Newton’s first “law of inertia”, as the degree of energy it takes to produce the change. In systems theory, induced changes will typically meet negative feedback loops, weakening their impact, while in some cases positive feedback loops creating dynamics for permanent change are also conceivable (True, Jones and Baumgartner 1999, Bressers and Lulofs 2009). In terms of the 5 elements of governance, intensity is greater in as far as upper levels are also more deeply involved, actors that are also powerful in other domains are more deeply involved in the relevant policy network for the issue at stake, the issue

plays a larger role in the public debate leading to a greater openness to try to push developments away from a business-as-usual track (thus with more ambitious goals), the instruments made available to be used include more interventionist ones, and the amount of resources made available for implementation is larger.

Section Summary

This section outlined why it is essential in terms of understanding regime impacts on sustainability why the somewhat static factors of extent and coherence are supplemented with flexibility and intensity. Under the conditions of sufficient motivation of the implementers and sufficient inter-regime extent and coherence more flexibility will lead to better adaptive strategies and thereby to better results. Resilient governance systems that are a stimulating context for adaptive management strategies and thus for natural system resilience are having sufficient extent and coherence, and moreover adequate intensity and flexibility. The application of these conceptual developments is illustrated in the empirical example below.

Regge River Restoration

Regge restoration as a complex and dynamic implementation process

The Dutch Water Boards are the watershed based government bodies responsible for the management of most water quantity and some quality related issues in the Netherlands. The Water Board of Regge and Dinkel (which is in charge of two portions of watersheds belonging to the Regge and Dinkel rivers) is tasked with realizing around 10,000 hectares of 'retention area' (to buffer stored water at peak levels), and a large proportion of this challenge is hoped to be realized in the Regge valley. The target area also contains portions of the

National Ecological Network (EHS) and so within the case study area there are various levels of government, different nature organizations, farmers, companies and citizens, ideally all working together in this project with similar and overlapping goals to increase to the fullest extent they can, the multifunctionality of the landscape under study.

In 1998, the Water Board Regge and Dinkel and the Government Service for Land and Water Management (DLG)¹ worked together to develop the Regge Vision. It was decided that the vision would be as clear as possible in terms of goals, though specifics on implementation and planning would be foregone. In the Reggevisie they provided information on the ideal situation towards which they would work, difficulties and complexities they would encounter as well as possible measures they could use to reach the goals. They made mention of the various partner institutions that they expected to be strategic in its accomplishment as well as a number of accepted criteria for various measures of acceptable drainage, water quality, etc. Given the large scale of the project, it was realized early on that spending too much time in the planning stages would be seriously detrimental to the achievement of the overall goals if the idea of developing a perfect plan that reached each and every goal for the area was sought. They chose to adopt an opportunistic approach at the beginning of the project. By this it is meant that they would not start in a methodical manner, but would wait to see what projects would develop themselves and then work to include as many aspects of the vision as possible. As part of their ongoing operations, the Water Board would take different opportunities to purchase land outside of the Regge Valley with the intention of having it to offer to land owners (generally farmers) whose operations within the Regge Valley were not in line with the desired landscape and activities stemming from the plan. They left ample room within the Regge Vision for coincidences to determine where they

¹ The DLG works to take policy and implement it with specific on the ground projects that also incorporate policies and programs from the other levels of government dealing with open spaces for recreation, nature, water management and agriculture. Specifically they acquire land, redevelop it and then transfer it to administrative authorities and individual farmers.

would focus their short term project efforts, working in local subprojects along the course of the whole river, and then later on trying to fill the gaps between them.

This resulted in a piecemeal implementation with sub-projects developed and developing all along the course of the river. In 2010 there were eight projects realized or in an advanced stage, while in six intermediate areas projects were in various degrees of preparation. For only 7 of the 52 kilometers there is as yet to be any activity in preparation. In a forthcoming book (De Boer and Bressers 2011) we analyse all of these projects in greater detail. In order to provide the reader here with a concrete view on how these projects work in practice we present below just one of the advanced sub-projects as an example. Thereafter we'll return to the lessons learned from all of the Regge restorations experiences.

Illustrative example: "Green Mould" subproject

After the completion of the Regge Vision white paper, the waterboard quickly began preparing for the Regge renaturalization projects. This particular subproject runs along a stretch of the Regge and is a part of an ecological pathway that runs close to and even partly within the built-up area of the town of Nijverdal. Providing more space for the river is part of the first phase of planned nature development for this area. A few years ago the initial phase began when an athletics court was being built into the landscape. This was to serve as a showcase to the public of what the reconstruction project as a whole was going to look like. Alongside the existing main water course of the Regge a naturally landscaped side course would be constructed. This serves not only normal daily water drainage needs, but also increased buffering capacity at peak water flows. The landscaping in the project will also try to decrease the visual intrusion of two major roads. In this project the waterboard cooperated with the nature NGO Landscape Overijssel, the Province of Overijssel, the environmental NGO Nature and Environment Overijssel, the State Water Agency and the Municipality of Hellendoorn.

In the area of the Municipality of Hellendoorn a number of different projects have come together. Of the three geographical phases of the main project, only the middle portion has yet to be realised. At an additional section the Water Board is still in consultation with the Municipal leaders in Hellendoorn as to how they can continue to cooperate at a higher strategic level. Physically, there is a bottleneck in the river located within the project area as well as a purifying plant which belongs to the Water Board. A larger tunnel plan which involves a deepening of the train tracks coming from Nijverdal is planned for the area which involves passing the Regge underneath this deepened train track. The Municipality has had the lead in realizing all of these developments however a large portion of the space that was created was done in cooperation with the Waterboard.

Enabling this level of cooperation required a lot of linking (coupling) both at the administrative board and civil servant official level. While the renaturalization ideas came originally from the Waterboard, out of the Reggevisie, the concrete plans were developed by the Municipality. Considering the priority given to the more urgent tunnel plan and other developing interests by the Municipality, the Water Board decided it would be most effective to link its objectives into these plans in order best realize its own purposes.

Despite there being a very cooperative atmosphere right from the start, the project did require a lot of time to develop given the highly complex nature of it. They began discussions and exchanged ideas at the civil servant level where they were able to put their desires all together on the table. They then began to figure out how they could work with each other to combine all the separate goals over so-called “charcoal sketches”, which were designed by a free style form of thinking from the participants.

It is essential to make good decisions regarding who to include and who not to include in this exchange when working in such a congenial manner. There is a limit to what extent additional actors’ interests can be drawn in. Drawing the correct boundaries in terms of how many interests can be included without excessively diluting the core perceptions, is important. Extending this too far

beyond the purpose of attracting additional resources should not be done when it will force the collective development to become unproductive. In practice, it was witnessed that these decisions are made initially on the basis of ownership and who is going to contribute to the overall payment and then further as a result of who is going to manage the area after the project is realized.

Following the initial project idea development stage, the funders can then decide to present their idea to higher levels of government that were not originally included (the province for instance) for additional funding. At this point, a critical assessment can also take place regarding who is further required in order to officially push the plans through. It was decided in this case that the Rijkswaterstaat (state public works agency), and ProRail (state company for railway exploitation) needed to be involved in further development because of the necessary permitting, planning and infrastructural requirements of the train tunnel project. This kind of “snowballing” can be regarded in general as the model for the growth of the project team. In this project the perceived benefit of removing potential obstacles through the open and inclusive plan development did indeed result in a project that was not hindered through internal or external objections.

This case is set at the end of 20 year discussion regarding the east-west corridor which cut through the center of the city. Previously suggested alternative routes were too detrimental to the natural areas surrounding the city, so the final decision was seen to best represent various interests; nature, culture, infrastructure, transit needs. This solution further required the north-south corridor to be redesigned which brought about concerns due to the urban quality, the valuable agricultural lands, the two estates with cultural historical and aesthetic value and also the close proximity to the Regge valley which is designated to become a robust ecological linkage zone. The hard “red line” in place to contain urban developments in the land use plans of the several layers of government would have prevented any of the possible solutions from developing. The participants referred to this as being trapped in a “Red Mould”.

At this stage two provincial Deputies, the Mayor, two Aldermen and some involved local civil servants met and decided that they would develop a solution which would “satisfy” the various interests. This implied that they would encroach over the “red line” at the expense of some of the nature and water interests. A major concern was how to prevent this action from setting a precedent for other cases. They decided to leave the road trajectory as a separate issue and develop an area plan that would deal with all issues concerning that area in an integrated way. In contrast to the “red mould” which was designed to contain urbanization, the “green mould” would cradle integrated developments which had a high priority for nature and landscape interests. The process style in this vision should not be defensive, protecting separate interests, but optimizing and creative, striving for overall improvement, in a “give and take” style process. A voluntary agreement, known as an “Administrative Accord”, between the different government levels and the Water Board became the basis for the project.

To further the understanding of the informal give and take process it is helpful to explain the general perception regarding the future of the development for the area. Even though some outskirt areas that were at the time “open green space” were formally developed within the urban fabric, it was believed that a number of others were now better protected given that their close proximity to the urban area, would have guaranteed that they would suffer in the future from gradual urbanization impacts such as fragmentation and reduced landscape attractiveness.

Due to the integrated planning process, the existing Regge bed was able to remain with the additional development of an urban leisure function. “Zomps”, the cultural-historical river boats from the town of Enter in the south were now able to travel through to Nijverdal. Recreation centres provide new canoeing opportunities which the local authority and the Water Board regard as important given that the recreational co-use of the developments are crucial for securing public support. Planning the newly required bridge as part of the entire development plan was a multi-governmental endeavour and went smoothly with the cooperation of the State Works Agency (which was able to provide two real

bridges instead of one due to the timely nature of which they were involved) The municipal cooperation was also then of course well coordinated in the adaptation of the land use plan for the new road due to the genuine feeling of cooperation to optimize the project among all parties involved.

Although the sub-project is not yet complete, there are already a number of recognizable results: linking of nature areas by new nature, additional water drainage by the addition of a partial parallel river course, additional water buffering, enabling urban growth needs and new road, bridge and rail infrastructure, land and water recreational facilities. It was felt that although some aspects of the plan resulted in a reduction of natural value in some areas, that additional financial resources may have been required and that some agricultural land was sacrificed, that this was done without compromising the social, natural and landscape value over the whole area.

The early efforts put towards beginning the process with a small coherent project group containing members which had already gotten to know and trust each other in previous projects led to a number of beneficial results. This increased the ability (*receptivity*) of the members to consciously pay attention to the inclusion of their personal as well as each others' interests which further reinforced the exhibited trust and enabled more creative solutions. Generally it can be said that as a result of the conscious attention paid (*external strategies*) to the development of the actor constellation, the actor characteristics of the different participants are quite in line with each other. This is related to the groups' ability to overlap common water, nature and recreation goals with the urgency to create new infrastructure for trains and cars. This strategy of further multi-functionality of the project did increase project complexity although it was clear that this was complexity that was inherently unavoidable due to the presence of the existing hard conditions.

The strategies related to actor constellation also contributed to the success of the special high-level consultation round resulting in a multi-governmental "administrative" agreement. Without the initial momentum and consensual

success witnessed at the early stages, the *internal strategies* and *organizational receptivity* towards satisfying joint interests required by the involved civil servants would have been hindered by stronger “personal interest” type negotiations.

The main *regime inflexibility* that had to be overcome by the Agreement Accord came from land use planning and the hard “red lines” confining development within a “red mould”. They are meant to protect rural landscape, but in this case were creating the impossibility to protect the Regge valley. They were replaced by a “green mould” that guaranteed at least an equally beneficial solution for nature and landscape. Thus, the conclusion for this case is that the main inflexibility of the regime was indeed proven to be surmountable by clever concerted action of the stakeholder actors.

Above we have shown one of the relatively advanced sub-projects to illustrate how the adaptive management approach to the Regge restoration implementation is working in practice. Apart from this sub-project our data-gathering and -analysis also involved all other early, advanced and realized sub-projects and the more general issues regarding the whole process (De Boer and Bressers 2011, forthcoming). In the next sections we will report our findings on the basis of all of these. We will first deal with the external strategies used to create more productive process settings, then with internal strategies to create more organizational receptivity for enabling these external strategies, and lastly the degree of flexibility as a regime characteristic that facilitates and stimulates the use of both such external and internal strategies.

External strategies for Regge restoration in general: avoiding competition games

A number of strategies were used to prepare and modify the direct context of the process to increase the likelihood of productive processes. These careful strategies were regarding 1) actor constellation, 2) choice of institutional arena's, and 3) changing cognitions, motivations and resources of the actors. However some of these strategies worked in various, multiple and indirect ways,

eventually through all of these identified points of action. Therefore it is not easily doable to separate them into these categories. To illustrate this, we show below a figure that tries to link the concrete strategies observed to the various points of action that we came across in another subproject, which is referred to as Diepenheim:

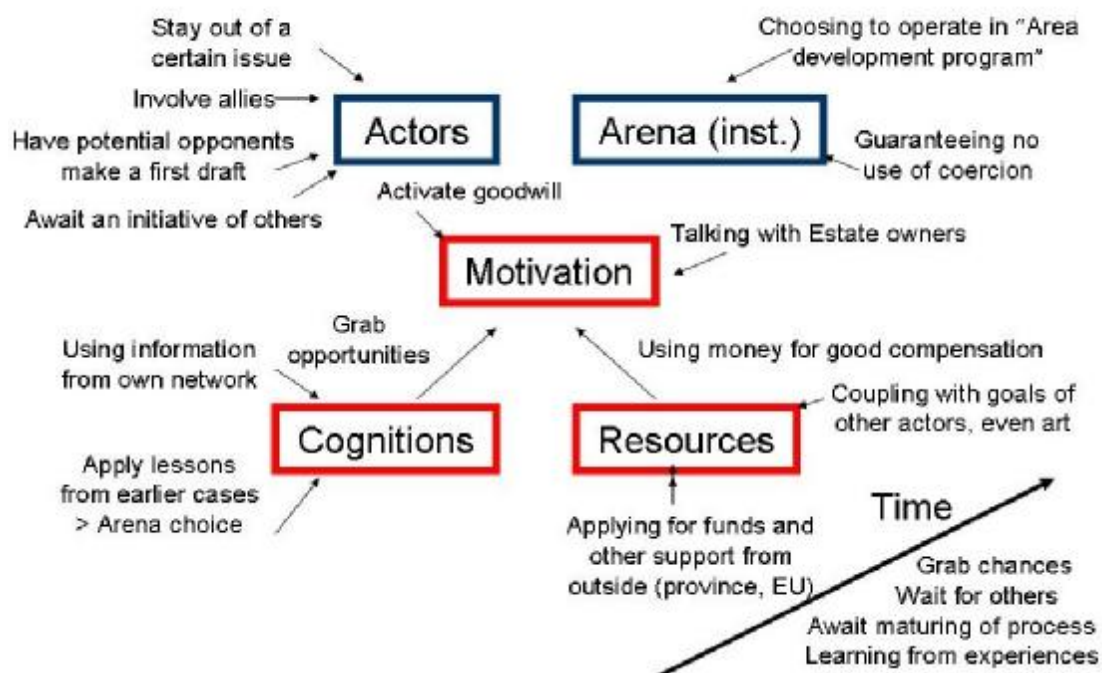


Figure 2, Overview of external strategies used in the Diepenheim case

In other sub-projects we for instance observed that arena choices were made to include or exclude actors with the ultimate goal of having direct results on the ability of the project to move forward and to satisfy the competing interests within the complex and dynamic actor arena. But even while there is no clear cut division line between strategies used to influence any of the identified points of action, we can give some examples.

Actor Constellation: In the general method in which the Water Board has undertaken the implementation of the Regge Restoration program there are a

few over-riding strategies. In a relatively continual strategy they choose to actively learn not only general rules from past projects but more precisely: who to ask (or not), how to build trust, and how to build informal contact. Likewise, good cooperation is presented as a positive example to desired future relationships. Trust seems indeed to be of key importance. More generally in accepting to “give in” somewhat at some point in time or on some issue was seen as a calculated risk that could help to build trust that would return benefits later.

Another strategy of the Water Board is not to start the project on its own, but to wait and to hook on to an existing initiative of “Area development”. Thus not the Water Board, but for instance the Municipality is the main director of the process, which might have disadvantages under adversarial conditions, but mainly advantages when the goals are in accordance with one another. This is a strategy that not only involves the actor constellation, but also the choice of institutional arena, an option that exists because there are more legal and voluntary possibilities to frame these river restoration sub-projects.

Setting the Institutional Arenas: Strategies preventing anticipated competition games developed as expected related to the actor constellation, however the institutional arena is also indirectly or directly related to the actor characteristics of the actors involved. The Water Board can be seen to have altered the rules of the game that the actors were participating in through the purchasing of land to provide different possibilities for ownership arrangements, choosing voluntary programs as opposed to land expropriation options and playing a partnering role.

Directly affecting cognitions, motivations and resources of other actors: According to Contextual Interaction Theory, the actor constellation and arena oriented strategies discussed here are important for implementation in terms of how they ultimately influence the resulting cognitions, motivations and power and resources of the actors involved.

The *cognitions and motivations* of the various actors are seen to slowly overlap towards a positive and open understanding of how communal interests

can provide more than separate ones. It is very important to have as much as possible direct personal communication with stakeholders. Often, talking with farmers and neighbours is the only way to overcome a clash of fundamental “readings of reality”. With institutional stakeholders open consultation and creative efforts to support each others interests creates upward spirals and eventually pays off for instance in terms of trust building. The entire public participation process was not thus just a matter of communicating, but also of being open and moreover really trying to advance others’ interests whenever possible and when they can be made sufficiently compatible with one’s own. This aided in getting cognitions and motivations about the project to become more in line.

The buying of land preceding the project development, in order to get a private landowner *resource* position in the area is also often used. Sometimes this is a matter of timely stepping into the “window of opportunity’ when a farmer wants to quit. In several ways this kind of resource can be put into use during later phases of the process, to use the land itself, but also to exchange it with other lands that are needed for the project. Buying land when there is not yet a project developed is of course an investment, but it has also the benefit of avoiding both resistance and possible price pressures compared to buying when a project needs to be realized. This strategy clearly increases the power and resources situation of themselves as an actor in the process and enables them to better implement the project and meet the end goals.

Compensation as a strategy – apart from offering a fair price for the land – was observed in the use of the green and blue services payments for a farmer involved. This is as yet the only example of PES (Payments for Environmental Services) along the Regge River, even though the instrument is often seen as having major future importance.

There are also good examples of timing strategies found in several sub-projects of that consisted of grabbing an opportunity as soon as it occurs and is in accordance with a broad vision. This strategy works by accepting and encouraging the motivations of others that are in line with the goals of the project.

It also makes use of what would otherwise have been external power and resources to help to execute actions that benefit the final result.

Internal strategies for Regge restoration: getting implementation organizations prepared for the job

The receptivity of an organization is very dependent on not only the quality of its members, but also its internal organization and culture. Receptivity can also be a characteristic of the project team in which representatives of several organizations cooperate. In that case it is important to make strong project teams with well chosen people from different organizations but a joint loyalty to the project, where the members are not thinking of “winning a game”, but “producing a joint product” (proactive strategy).

Within an organization it proves to be very important that there is direct informal communication between civil servants and board members and vice versa. This improves the option of using more players of the organization in sub-processes (supporting each other’s actions). It also mutually creates good knowledge of the conditions of the process and the leeway the board allows. Some degree of freedom and backing for representatives in external communications with other actors is essential, including the freedom of deviation from the “normal” linear planning – realization – operation sequence. This even includes a degree of allowing entrepreneurial risk taking, including stretching the degrees of freedom (for instance to grab an opportunity as it temporarily occurs, using a “window of opportunity”). The civil servants interviewed as part of this research considered it important not to misuse or overuse the board members. Administrators are generally asked to participate when there is a good chance for success: “success has many fathers, failure often just one scapegoat”. Similarly they would be asked to propose a project plan to the council if the necessary additional resources were required.

The relationship between the board and the council should provide political backing from council for the board and the civil servants which support

such adaptive strategies. The same holds for “higher” authorities in terms of not try to count/measure each individual contribution when they recognize the potential gain from adaptive management. Of course, for all of these strategies there is an optimum between extremes, which will have to be determined and regularly reassessed.

Lastly there should be a learning process that takes place from being open and alert to the presence of coincidental and occasional opportunities, towards actively searching for them, and then to ultimately assessing the situation and other actors to look for possibilities to create new opportunities (including the important element of timing).

Threats to flexibility

In the various subprojects as well as generally for the entire project perception and development, various forms of inflexibility of the regime which were causing problems for adaptive management were identified. Since of the five elements of governance, the “responsibilities and resources for implementation” and to a somewhat lesser degree the “instrument mixes” have the most direct impact on the implementation process, it need not be a surprise that the mentioned inflexibilities are mostly connected to these elements. European or other international policies are sometime at the root of these issues, although always with the intermediate national interpretation as a layer between the international and the local arena. This makes it hard – and often incorrect – to attribute the inflexibility to specific aspects at the international level.

There has been a strong pressure by central government (and the province) to proceed with voluntarily based projects even when this clearly encroaches upon the 2018 timeline. The legal option of forced land exchanges (with the clause of ensuring that the farmers situation is not worsened), is therefore hardly used. It is however widely recognized that expropriation can result in farmers staying relatively inactive in the process, so it is questionable

whether this factual restriction of legal resources of implementers really changes what they would have done otherwise in most cases.

Often patience is needed in these projects because financial and legal resources are insufficient to realize the projects at short notice, but time is sometimes restricted by subsidy requirements that do not match complex and opportunity seeking project timelines. Prepaying constructors or similar ways of softening such deadlines is no longer allowed, which even further increases the sharpness of these requirements. Multiple subsidies with such deadlines can make the financial foundation of a project look like a playing card house where if one card falls then the rest come quickly tumbling down.

Conclusion and outlook

The Regge restoration process dealt with in this paper provides quite nice examples of how the relative flexibility of the Netherlands regime can be well used to enable adaptive implementation with interesting results. Advances in aspects of the regime are still possible given that much is certainly not quite flexible enough and there seems to be some retreat into separate quantitative accountability forcing projects partners to fight harder for sectoral goals, resulting in less compromises and thereby making the end situation worse off for most if not for all of the stakeholders. Nevertheless the analysis in this paper shows a remarkable variety of strategies of practitioners to cope with many different environments, which are hopefully lessons that can be useful in other situations as well.

In the analysis above we did not address the coherence of the governance regime which is in fact composed of various different policy programs. In the research period the coherence between the various pillars of the projects, the various policy schemes that are used to support the projects with legal, political and financial resources, is in fact quite well realized from the bottom up by the

regional and local partners. However, the (inter-)regime itself is less integrated. This makes the situation vulnerable. When one of the pillars loses its intensity, then the whole “ecosystem” of governance loses its resilience. Recent developments have shown such risks are real.

The main political driving forces for these interesting projects are the new perspectives on water management that are mainly a response to the threats connected to climate change and to a lesser extent a response to the EU Water Framework Directive. Additionally, the nature policies strive to form a connection between existing nature areas and often the additional development of new areas for nature to create a robust natural system from the fragmented and shrinking one that was under threat until 1990.

Despite these policies having a long history in the Netherlands and a high level of support they are very hard to implement in such a dense country. Furthermore they are challenged by people who suggest that defence from flooding can be more effectively obtained by developing additional, stronger dikes rather than by renaturalization. There are also some revisionist beliefs in the field of experts that much of the fragmented nature structure should be abolished and instead there should be concentration on developing the larger areas, for instance the wetlands that are rarer in Europe than the woods, heather and tributary river plains that are typical for the East and South of the Netherlands.

In our view this idea is too single-sidedly biodiversity oriented and ignores the role of direct human experience of nature and landscape beauty, including waters, as a real asset to human well being, even though it is only partially measurable in economic terms. Some studies hold that even these measurable economic effects are substantial, for instance by increases in housing value and tourism development. More importantly, as unlimited material consumption increase will only more aggressively deplete the earth's natural reserves a different conception of wellbeing in the rich countries is essential and investing in

nature restoration and beautiful living surroundings in general certainly fits this conception.

Pitifully, in the current period surrounding 2010 most western societies are desperately trying to regain the economic growth rates from before the financial crisis, at the cost of natural and cultural values as they are seen as obstacles, and at the expense of domestic and even more so global sustainability. The new Dutch government of 2010 has even broken away from the 20 years of policy continuity by giving up the further realization of ecological pathways. As a consequence the progress of the projects described in this paper has become very uncertain, at least for the years to come.

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