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Research paper

Room for the River: delivering integrated river basin management in the Netherlands

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ABSTRACT

This article describes how the governance arrangements of the 2.2 billion Euro water safety programme Room for the River are enabling a transition towards integrated river basin management in the Netherlands. We observe that in terms of integrating multiple objectives and spatial scales, the programme design and multi-level governance processes in the programme have enabled the establishment of integrated plans and designs. We conclude that Room for the River plays an important role in a transition to integrated river basin management in the Netherlands through practical implementation of the strategic policy vision for integrated water management. Also, through application of a mixed centralized–decentralized governance approach, the programme has tackled governance pitfalls related to centralized planning approaches that previously impeded integrated water management. Although several of the governance lessons of the programme are being adopted by, for example, the Delta Programme, we have identified a risk that continuity of the newly introduced governance approach may be lost when the Room for the River programme is completed in 2015.

Keywords: Delta Programme; flooding; integrated river basin management; the Netherlands; Room for the River; transition; water

1 Introduction

Traditionally in the Netherlands, water management was seen purely as a matter of civil engineering and aimed at controlling nature. Saeijs (1991, p. 245) illustrated this by writing ‘God created man, but the Dutch created their own land’. Over the last 1000 years, this attitude towards water management has resulted in gradual development in the washlands of the country’s rivers that has reduced room for them and required repeated heightening of flood defenses. However, several policy scientists argue that, in common with many other countries, a transition has been taking place in flood risk management in the Netherlands since the 1970s. In this transition, the traditional sectoral engineering approach to flood risk management is gradually being replaced by an integrated approach that incorporates various disciplines such as water management, spatial planning and ecology

(van der Brugge *et al.* 2005, van Stokkom *et al.* 2005, Wiering and Arts 2006). A similar change is taking place in flood risk management in, for example, Europe and North America (Warner *et al.* 2013).

The first time that the ‘control paradigm’ was challenged and adapted to include ecological values was during the national public debate that led to a significant alteration of the original construction plan of the Eastern Scheldt storm surge barrier in 1974. Irreversible ecological damage of the salt water environment that would be caused by the closing of the Eastern Scheldt estuary was avoided through the construction of moveable panels that would only be closed under extreme circumstances (Knoester *et al.* 1984). Later in the 1980s, the technocratic control paradigm was further challenged by the emergence of the concept of ‘integrated water management’ that originally aimed to avoid conflicts between different uses

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of water resources through improved coordination (Saeijs 1991). Although these new principles were already applied in the 1970s and the 1980s, it was not until after the 1993 and 1995 near-miss river floods that a new policy window opened for the implementation of integrated water management (van der Brugge *et al.* 2005, van Stokkom *et al.* 2005, Wolsink 2006).

In 1995, extreme river water levels nearly caused dike breaches and led to the evacuation of 250,000 people and 1 million cattle. This created enhanced awareness amongst the public, politicians, public administration and water professionals that nature cannot be controlled and that new ways of managing rivers was required; i.e. through creating more space for rivers to discharge their flows. As an *ad hoc* response, a new policy line, the Room for the River Directive, was developed by the Dutch government (ten Heuvelhof *et al.* 2007). This Directive established that water should be considered as a structuring principle for spatial development (Oostdam *et al.* 2000, Valk and Wolsink 2001). However, as Wolsink (2006) points out, spatial developments are still mostly being driven by economic and social priorities. In line with this, the report of the Dutch governmental advisory Commission 'Water Management 21st Century' recommended mutual adjustment of water and spatial conditions rather than water as the leading structuring principle (CW21 2000).

The Room for the River Directive resulted in the approval of the governmental decision for the Room for the River programme (Planologische Kern Beslissing (PKB) Ruimte voor de Rivier) by the Dutch Senate in December 2006. The 2.2 billion Euro Room for the River programme began the detailed design phase in 2006 and is scheduled for completion by 2015. It has a dual objective of (1) improving safety against flooding of riverine areas of the Rivers Rhine, Meuse, Waal, IJssel and Lek by accommodating a discharge capacity of 16,000 m³/s and (2) contributing to the improvement of the spatial quality of the riverine area. At the start of the programme, a set of 39 locations was selected for giving more Room for the Rivers through, for example, flood by-passes, excavation of flood plains, dike relocation and lowering of groynes (Figure 1).

Although this meant the commencement of large-scale implementation of an integrated water management approach, several assessments of the uptake of integrated water management concluded, at the time of commencing the plan study phase of the Room for the River programme (2006), that the transition towards integrated water management was not complete (van der Brugge *et al.* 2005, Wiering and Arts 2006, Wolsink 2006). For example, van der Brugge *et al.* (2005) comment that, at the time of writing, there was still a considerable gap between strategic policy visions and practical implementation. Furthermore, Wolsink (2006) pointed out that governance pitfalls related to centralized planning cultures (lack of participation and lack of consideration of local identity in planning decisions) impeded integrated water management. Similarly, Wiering and Arts (2006) concluded that, at the time, it was too early to speak of 'deep institutional change', because although the

traditional water institutions were opening up to other disciplines they were maintaining their power positions.

However, the Room for the River programme has adopted a new (multi-level) governance approach in which government agencies in different disciplines (e.g. water safety, planning, agriculture and nature) and at national, regional and local levels are actively collaborating (van den Brink 2009). The programme uses a mix of centralized (national) steering/decentralized (regional) decision-making processes (see also ten Heuvelhof *et al.* 2007). The decision frameworks for establishing improved water safety and spatial quality are set by the national government, whilst the plans and designs are formulated and decisions taken by local and regional stakeholders in 39 regional projects. The national government has established a central programme office to manage and monitor progress, evaluate quality of designs and facilitate the regional projects through guidelines, providing expert knowledge, community building and where needed, applying political pressure. This approach provided the opportunity for decentralized governments to link local issues such as new developments and the development of natural and recreational areas with the water safety agenda (Hulsker *et al.* 2011, van Twist *et al.* 2011b).

At present (August 2012), most of the initial 39 regional projects within the Room for the River programme have completed their planning phase and entered the realization phase (PDR 2011b). Meanwhile, Room for the River is considered an 'exemplary project' for adopting new governance approaches by the Ministry of Infrastructure and Environment and Rijkswaterstaat (the executive arm of the Dutch Ministry of Infrastructure and the Environment, which is responsible for the design, construction, management and maintenance of the main infrastructure facilities in the Netherlands) and (van den Brink 2009, p. 15). For example, the recently established Delta Programme (2009–2015) is using Room for the River as an example for governance and developing integrated strategies. The Delta Programme is currently preparing Delta Decisions for securing water safety (against flooding) and fresh water supplies. These Delta Decisions will be ready in 2015 and will be implemented according to the Delta Act that provides a continuous funding stream of 1 billion Euro per year into a Delta Fund from 2012 and beyond. Hence, the lessons from Room for the River have potentially major implications for future water management in the Netherlands.

These lessons also have international relevance, as the concepts of making space for rivers and new multi-level governance approaches are also being adopted by other countries. For example, the concept of making space for rivers is being applied in countries, such as France, Germany, Hungary, Romania, the UK and the USA (DEFRA 2007, Opperman *et al.* 2009, Warner *et al.* 2013). Although the motivations for the concept of making space for rivers vary in these countries, the implications in terms of governance are similar: multi-level governance approaches are considered to be required for overcoming controversies between various actors involved (Warner

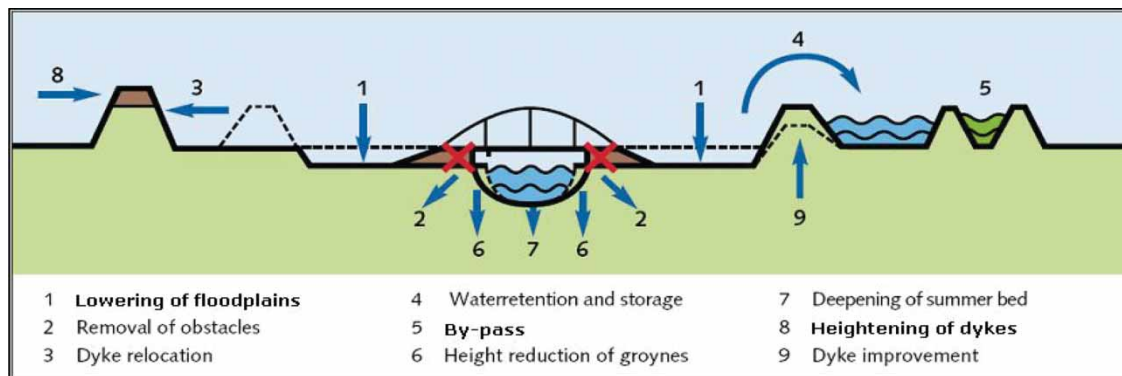


Figure 1 Measures that are applied in Room for the River.

Source: Room for the River programme office.

et al. 2013). Similarly, many others advocate a multi-level governance approach for integrated water management (Huiteima *et al.* 2009, Pahl-Wostl *et al.* 2010, van de Meene *et al.* 2011, Huntjens *et al.* 2012). However, the scale of taking a structured and integrated view to flood protection as being applied in the Netherlands is not being matched elsewhere (Warner *et al.* 2013). In this light, the Netherlands is collaborating intensively with countries such as the USA, Vietnam, Bangladesh and Indonesia to adopt integrated approaches to water management (see also Zevenbergen *et al.* in press).

In the light of these new ideas and initiatives and the leading position of the Netherlands, we have re-assessed the transition towards integrated river basin management in the Netherlands in this article by examining to what extent the governance arrangements of the Room for the River programme influence this shift. In order to do this, we first identify how the governance arrangements of Room for the River are enabling integrated plans and designs. Subsequently, we discuss the experiences and lessons learnt from Room for the River and how these are being adopted in the Delta Programme.

2 Research approach

2.1 Theoretical framework

2.1.1 Integrated river basin management

The concept of integrated river basin management is derived from integrated water resources management. The term ‘integrated water resource management’ is interpreted differently by many (see also Biswas 2004). Overall, integrated water resource management is a comprehensive approach (Mitchell 2005). For example, it is defined as ‘a process which promotes the coordinated development and management of water, land and related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems’ (Global Water Partnership 2000). It refers to a holistic approach to the whole water cycle, including natural flows (i.e. precipitation, storm-water, groundwater, surface water and evapotranspiration) and man-made flows (e.g. drinking water, sewage and recycled

water). It also relates to different functionalities of water systems, such as providing water safety, transport capacity, water security and healthy ecosystems. Similar to integrated water resource management, integrated river basin management is a comprehensive and coordinated approach. The main difference is that it focuses explicitly on river basins.

From the scientific literature, three different perspectives on integrated river basin management can be distinguished. First, integration is about alignment and balancing of *multiple objectives*. For river basin management, objectives such as providing safety, transport capacity, opportunities for recreation, enabling nature, facilitating economics, safeguarding aesthetics and water quality play an important role (Saeijs 1991, Opperman *et al.* 2009, e.g. Downs *et al.* 1991). Integrated river basin management particularly takes into account the interplay between water and land use functions (Hooijer *et al.* 2004, Moss 2004). Second, an integrated approach is a systems approach that includes all relevant *spatial scales* (see also Adger *et al.* 2005, Zevenbergen *et al.* 2008): systems as a whole and parts of systems such as components and elements (see van Herk *et al.* 2006). Relevant spatial scales for river basins are, for example, catchment and sub-catchment scales (Jaspers 2003, Savenije 2009); and international, national, regional and local scales. Third, comprehension of short- and long-term *time scales* in order to balance short- and long-term costs and benefits and anticipate (potential) future change (see also Adger *et al.* 2005, Zevenbergen *et al.* 2008). For example, the definition of the Global Water Partnership for integrated water resource management that is quoted above includes the word sustainability, which is about meeting present needs without compromising the ability to meet future needs (see also Brundtland 1987).

Summarizing the above, we define integrated river basin management as a comprehensive water management approach that aligns multiple objectives in a river basin across different spatial scales and temporal dimensions.

2.1.2 Governance of change

Water governance refers to the range of political, social, economic and administrative systems that are in place to regulate development and management of water resources and provisions of water

services at different levels of society. (Global Water Partnership 2002)

The above definition provides an indication regarding the meaning of water governance. However, governance is a concept rooted in the social sciences and as such is defined and interpreted in many different ways (for an overview of definitions and interpretations, see e.g. Rhodes 1996, Kjær 2004). Governance incorporates both processes and structures required for steering and managing parts of societies (Kooiman 1993, Pierre and Peters 2000). As a process, governance refers to managing networks, markets, hierarchies or communities (Rhodes 1996, Kjær 2004), whereas governance as structure refers to the institutional design of patterns and mechanisms in which social order is generated and reproduced (Voß 2007). Taking a combined view, governance can be considered as comprising three mutually reinforcing elements: policy (problems and solutions), polity (rules and structures) and politics (interaction and process) (Voß and Bornemann 2011). Governance is also the outcome of interaction among multiple actors from different sectors with different levels of authority (Agrawal 2003). As such, governance relies on institutions consisting of cognitive (dominant knowledge, thinking and skills), normative (culture, values and leadership) and regulative components (administration, rules and systems) that mutually influence practice (Scott 2001).

A transition is a structural change in the way a society or a subsystem of society (e.g. water management, energy supply and agriculture) operates, and can be described as a long-term non-linear process (25–50 years) that results from a co-evolution of cultural, institutional, economic, ecological and technological processes and developments on various scale levels (Rotmans *et al.* 2001). As such, transitions are structural changes of practices, institutions and culture. Managing transitions requires continuous influence and adjustment in governance systems (Loorbach 2007, Foxon *et al.* 2009, Smith and Stirling 2010).

The scholarship that focuses on governance of change (transition management) has emerged over the last 10–15 years and is still developing significantly. A common critique is that it lacks prescription for effectively establishing change. However, several attempts have been made to overcome this knowledge gap, including a framework for transition management (Loorbach 2010), principles for institutional design (Huntjens *et al.* 2012) and a procedure for evaluating the effectiveness of proposed approaches (Rijke *et al.* 2012). A ‘transitions governance framework’ was recently developed from a series of studies in the urban water sector in Australia (Farrelly *et al.* 2012). This framework consists of eight socio-institutional factors that are considered to have the capacity to influence

Table 1 Operational factors supporting transition governance (Farrelly *et al.* 2012).

Operational factors	Sub-components
Structure	
Narrative, metaphor and image (e.g. a clear vision)	Storyline that invokes a need for change Visual connection to problems and potential solutions
Regulatory and compliance agenda	Objectives and mechanisms (markets, legislative rules and education) Performance targets Monitoring, enforcement and evaluation
Economic justification	Demonstrated business case Appropriate allocation/evaluation of all social and environmental costs and benefits (monetary and non-monetary)
Policy and planning frameworks and institutional design	Define the scope of the policy Highlight the distribution and trade-offs of costs and benefits Legislation, administrative organizational arrangements Dedicated funding streams
Process	
Leadership	Distributed network leadership (policy, operational, private sector, science, community and political) Organizational leadership Positional and personal leadership characteristics
Capacity building and demonstration	Creating awareness about problems and solutions Build confidence in approach, technology and practice Develop new skills and competencies across the sector Creating informal incentives to apply and replicate leanings
Public engagement and behaviour change	Understanding existing community drivers Informing and engaging with the community Encouraging behaviour change amongst community members
Research and partnerships with policy/practice	Science partnerships: co-constructing science, policy and practice agendas for evidence-based decision-making

existing and future governance approaches, and hence the ability to adopt new practices (see Table 1).

The 'transition governance framework' distinguishes between structural factors and process factors. The structural factors are relatively stable over long timeframes, but remain subject to reinterpretation through the process factors, which can adapt more readily to changing circumstances over shorter timeframes. However, these processes will ultimately influence, but will also be guided by, the core structural attributes.

2.2 Methodology

The aim of this article is to describe to what extent the governance arrangements of the Room for the River programme are enabling a transition towards integrated river management in the Netherlands. We have based our findings on a document analysis, a series of face-to-face interviews ($n = 55$; see Table 2) and a quantitative survey ($n = 151$). All interviews covered similar topics including (1) the connection between water safety and spatial quality; (2) the output of the programme in terms of integrated solutions; (3) the organization of the programme/the management of the regional projects; (4) the uniqueness of Room for the River; and (5) lessons for the future. In addition, the results of a quantitative survey were used to confirm the interview responses about the output of Room for the River for when the design phase of nearly all plans in the programme is completed. In total, there were 151 survey respondents (48 from the Room for the River programme office, 10 from other parts of Rijkswaterstaat, 10 from the government ministries involved, 11 from provinces, 22 from waterboards, 36 from municipalities, 7 from the private sector and 7 other, such as scientists and community groups). Survey respondents included individuals working for the Programme Directorate, regional project teams, policy-makers and Delta Programme staff, as well as executive decision-makers at the national, regional and local governments.

Based on the data, the extent to which the output (i.e. the designs and plans) of Room for the River can be considered integrated (in terms of objectives, spatial scales and temporal

dimensions) has been evaluated. The interview and questionnaire responses about the governance of the Room for the River programme have been structured according to the 'transition governance framework' (Section 2.1.2) in order to analyse the extent to which Room for the River's programme design (input) and governance processes enabled integrated river basin management. In addition, we have assessed to what extent Room for the River's political and economic context has been influencing integrated output and outcome. Subsequently, we discuss how the lessons from Room for the River are being adopted in the Delta Programme and how translation could be improved.

Validation of the findings occurred through a workshop with officials of various government agencies and a validation workshop with a user panel comprising senior policy advisors; observations of three stakeholder management training sessions for three individual regional project teams; and observations from two political conferences for national, regional and local decision-makers from the Room for the River project areas and one conference for professionals within Rijkswaterstaat (see Table 2).

3 Research findings

3.1 Governance factors for establishing integrated river basin management outcomes

3.1.1 Vision

Soon after the occurrence of the extreme water levels in the Dutch river systems in 1993 and 1995, a new perspective rapidly became dominant amongst politicians, water managers, spatial planners and scientists that nature cannot be controlled. It was decided that high water discharges should not lead to higher water levels, because this would lead to increased damage during flooding. As such, it was decided that flood safety should be enhanced by giving more room for the rivers rather than heightening of flood defences (Hooijer *et al.* 2004, van der Brugge *et al.* 2005). The aforementioned groups, and particularly the individuals who were involved with the

Table 2 Data collection (interviews) and validation.

Method	Description	Respondents/participants
Interviews	Central programme office	14
	Central programme office (interface management with projects)	7
	Regional projects (team members and politicians)	17
	Senior advisors to the programme	8
	National policy-makers	6
	Management of follow-up programmes (Delta Programme)	3
Validation	Validation workshops (2x)	33
	Observing stakeholder management training sessions (3x)	45
	Observing political conferences (2x)	Approx. 220
	Observing knowledge symposium for Rijkswaterstaat professionals	Approx. 150

programme design of Room for the River, were aware that this required close collaboration between water management, spatial planning and other disciplines such as ecology and landscape architecture. Furthermore, partly due to previous experiences from large railway infrastructure projects (see Section 3.2), a vision became ‘common-currency’ that traditional top-down governance of the programme would no longer be appropriate. Instead, close collaboration between governments at various levels was needed. This led to a steering philosophy of ‘controlled trust’ rather than top-down governance.

In line with the advice of the Commission Elverding, which urged large infrastructure projects in the Netherlands in 2008 to apply improved planning processes for ‘faster and better’ results (Commissie Elverding 2008), Room for the River aimed to deliver the proposed measures before 2015 through stable decisions throughout the project. To avoid delays, the vision sought to involve politicians and non-governmental stakeholders early in the planning process to establish commitment and support, and to deliberately create overlap between separate planning stages (initiation, planning and realization) to generate input early in the planning process from actors responsible for regulation, operation and maintenance in order to establish realistic plans and designs of good quality.

3.1.2 Policy framework

The initiation phase (2000–2006) of Room for the River worked towards the Room for the River Policy Decision (PKB Ruimte voor de Rivier) (see also ten Heuvelhof *et al.* 2007). The decision was agreed by the Ministries of Public Works, Spatial Planning, and Agriculture and Environment, regional waterboards and provinces and the Association of Municipalities. A shared document set out the integrated vision by setting a double objective: (1) improve safety against flooding by accommodating a discharge capacity of 16,000 m³/s in Lobith (where the Rhine crosses the German border) and (2) contribute to the improvement of the spatial quality of the riverine area. It stated that water safety is the leading objective. In addition, the PKB selected 39 locations for measures to be implemented and provided general ideas for the types of measures at these locations.

Furthermore, the PKB documented the procedures for the planning and realization phases of the programme and the roles and responsibilities of the stakeholders. It described the principle that decentralized steering and execution of tasks should be applied where possible. To this end, a central programme office was established at Rijkswaterstaat to monitor progress, quality of plans and achievement of objectives. This also documented how the steering philosophy of ‘controlled trust’ should be executed.

After the national government approved the PKB, Room for the River officially started in December 2006. By documenting the vision, objectives, procedures, roles and responsibilities in a document that was supported and co-signed by all the levels of government involved, the PKB provided guidance and a

point of reference for the later phases of Room for the River. Similarly, for each individual project, the roles and responsibilities of the project partners in the planning stage were determined in ‘agreements for cooperation’ (*samenwerkingsovereenkomsten*). And for the realization stage, ‘realization agreements’ (*realisatieovereenkomsten*) described the quality, budget, time, market approach, project control methodology and risk distribution between region and Rijkswaterstaat. However, additional directions were also developed whilst the programme was underway (Section 3.1.6).

3.1.3 Economic justification

Budget-wise, Room for the River is primarily a water safety programme. The PKB states that the programme budget is allocated for improving water safety. However, because this budget also provides for integration of the measures in their local contexts, to alleviate resistance from local communities and secure maintenance after the measures are implemented. For example, in the dike relocation project in Deventer, the programme budget provides for the construction of an earth mound on which a farmer will build an organic dairy farm that will take responsibility for maintenance of the new flood plain. The programme office has since 13 December 2010 been obliged to indicate in their progress reports (Section 3.1.4) which part of the budget is allocated for increasing water safety and which part for other policy areas. In the 18th progress report that was sent to the Parliament, the programme office estimates the total cost for achieving water safety objectives and integration of the designs in their existing environments as €2169.5 million. In addition, third parties funded (e.g. municipalities and provinces) €80 million for spatial developments (PDR 2011a).

3.1.4 Regulation and compliance

It is the task of the central programme office to make sure that Room for the River’s objectives are achieved on time and within budget. A proactive justification cycle that consists of monitoring, facilitation and justification was set up by the programme office to fulfil this role (Figure 2).

According to the milestone management procedure that is described in the PKB (Section 3.1.2), the project teams need to follow a pre-set design process and deliver products (e.g. alternative design options, preferred designs, final designs and supplementary material) to the programme office. It is the core task of the programme office to evaluate the quality of these products in terms of hydraulic performance, spatial quality, legal procedures, geotechnics, integrated design, budgets and risk management. Every 6 months the programme office is required to send a progress report about the programme as a whole to the Dutch Parliament.

The programme office continuously monitors the project teams through ‘river branch managers’, who have regular interaction with project teams in order to achieve the desired quality and progress within the programme’s boundary

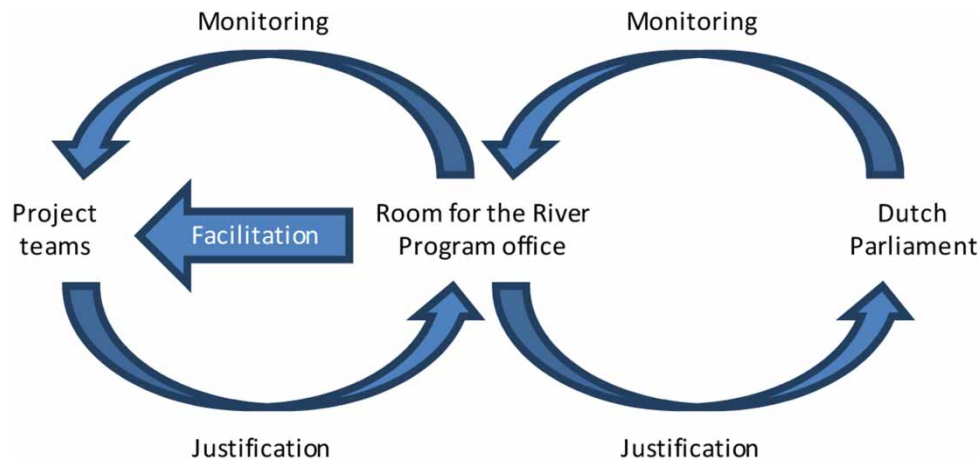


Figure 2 Room for the River's justification cycle.

conditions. These 'river branch managers' form the interface between the programme office and the project teams and establish the link with the people who conduct the evaluations. This continuous connection between the project teams and the programme office facilitates the pre-assessment of the attainment or otherwise of the milestones before the progress is submitted for approval. This provides the opportunity for the programme office to take timely action to facilitate improvements where the programme is not on track. Furthermore, an independent 'Q-team' of experts from multiple disciplines visited all projects at least three times to assess and give advice about the spatial quality of the plans.

The programme office facilitates the regional project teams in various ways. When project teams or 'river branch managers' identify a demand for expertise in a particular area, the programme office provides a central base of expert knowledge for all aspects that are being evaluated. If the programme office does not have the required expertise, it gives advice to project teams about where to acquire it. Also for individual projects, the programme office assists project teams in discussions with decision-makers at national, regional and local levels and in bringing together various stakeholders. For common issues across numerous projects, the programme office prepares handbooks and guidelines to assist project teams and avoid them 're-inventing the wheel'. For example, handbooks are prepared for topics for spatial quality, underground cables and pipes and risk assessment. If the programme-wide realization of projects is inhibited by existing policy and legislation, the programme office discusses this with national policy-makers and legislators. This has resulted in, for example, changed policy arrangements for geotechnics transportation outside and inside dike-rings (see also van Herk *et al.* 2012b).

3.1.5 Leadership

According to the stakeholders involved, collective leadership is one of the cornerstones of Room for the River. We have observed that the governmental collaboration, as documented in the PKB, is also taking place in the planning and realization phases of the

programme. On an organizational level, formal arrangements such as political covenants for initiation of projects (*bestuursovereenkomst*), collaboration agreements for the planning phases (*samenwerkingsovereenkomst*) and realization agreements for the realization phases (*realisatieovereenkomst*) define the collaboration by setting out the ambitions and responsibilities. In all projects within Room for the River, the national government is the client. In the initiation stage, the programme office executes the assignment. During the planning phase, each project has been assigned an 'initiator' (i.e. province, waterboard or municipality) who has formal responsibility to complete the plans. During the realization phase, a 'realizator' (in most cases Rijkswaterstaat) has been responsible for acquiring permissions, tendering and contracting private parties for the implementation of the plans.

With regard to individuals, different networks were identified in which actors collaborate to deliver the projects. At the level of project officers, formal and informal forms of collaboration can be identified. Each of the project teams is shaped according to a standardized model consisting of a project manager (budget and time), risk manager, stakeholder manager, technical manager and a contract manager. As such, different competencies are organized within the project teams. Outside teams it is possible to identify informal networks of individuals that fulfil similar roles in different projects in which common issues are discussed. However, interaction in these networks has occurred mostly occasionally and *ad hoc*. At the level of decision-makers, representatives from the organizations involved interact to build momentum and develop organizational commitment and legitimacy in the community. Also, we have identified several cases where informal interactions in networks of decision-makers have played an important role to develop solutions when problems arose at a project level.

3.1.6 Capacity building and demonstration

Three factors that enhanced the programme's capacity to achieve its objectives were identified (see also van Herk *et al.* 2012a). First, the programme office deliberately learned from the initial

projects, such as depoldering of the Noordwaard and the Overdiepse Polder, the dike relocation at Westenholte and the excavation of the floodplains in the Schellener and Oldeneler Buitenwaarden. As a result, it was able to improve, for example, interface management between programme office and project teams, the configuration of project teams, milestone management procedures and deliverables, and technical guidance of projects on topics like underground cables and pipes, geotechnics transportation and risk assessment. Individuals in the project teams and in the programme office described how learning from these early projects would not have been possible without the centralized knowledge management and quality control by the programme office.

Second, continuous adaptation of governance processes to changing circumstances occurred within the programme office to be able to deal appropriately with various issues at different stages of the programme. For example, initially the task of the programme office was to monitor progress and quality of the work in the 39 project teams. When the programme office recognized that certain expertise (e.g. hydraulic, geotechnical and legal) was inadequate in the project teams, it played a more facilitating role. When many projects shifted into the realization phase, a shortcoming of required expertise (e.g. market approach, tendering, logistics and litigation) was identified. As a result, the programme office enhanced its interface for each individual project with a senior staff member from its knowledge department and its project control department to support the 'river branch manager' who previously managed the interfacing task alone. Staff members of the programme office considered the pro-active justification cycle (Figure 2) as instrumental for signalling potential problems and solutions.

Third, the programme office built capacity in the professionals involved through training for stakeholder management. Moreover, it actively stimulated community building through organizing various network events that are tailored for particular roles, such as decision-makers, project managers, stakeholder managers and risk managers. Experiences are shared at these events, and problems and potential solutions discussed. This has resulted in a Room for the River community and informal networks in which lessons are shared.

3.1.7 Public engagement

In Room for the River, governance is not only about collaboration between different government levels and agencies, but also about early involvement with the community. One of the reasons for giving the lead to regional governments was that these governments would more easily achieve community support and/or invoke less resistance because they are considered to know the local community better than the national Rijkswaterstaat. Furthermore, Room for the River has a, for Rijkswaterstaat's standards, unusually large communication office to proactively inform the communities involved and promote the programme. In this article, we do not consider the Room for

the River (RvR) programme in terms of community contentment and support, as the article is concerned with professional practice and governmental transitions. However, several issues with regard to public engagement became apparent during the research. Examples identified include, *inter alia*, that where community engagement takes place too early in the planning process, it could lead to excessive expectations by the community and frustrations when it later appears that these expectations cannot be fulfilled. If engagement occurs too late (when there is no opportunity for adjustment of designs), it also leads to frustration and an increased risk of legal procedures. Also, an evaluation of the planning and design processes revealed that dominance of a small group in participative processes could result in sub-optimal designs that do not represent the common good (Hulsker et al. 2011).

3.1.8 Research

As outlined in Table 1, this section focuses on science partnerships in which science, policy and practice agendas are co-constructed for evidence-based decision-making and enabling transitions. According to the interviewees, scientific research has not played an active role in the programme to support learning processes at a project level, for example, through continuous reflection, the provision of scientific expertise or as a platform to bring together different disciplines. Instead, research institutes were involved only to audit and validate models and calculations. At the start of the programme, the hydraulic model was validated and standardized for all 39 projects by a leading water research institute. Otherwise, the involvement of science occurred mostly in an *ad hoc* way, for example, to provide a second opinion or independent advice within individual projects.

However, at a programme level (scientific) research has been used in the programme as an instrument to evaluate the processes, progress and outcomes. After completion of the PKB and after completion of the planning phase of the majority of the projects, processes and outcomes of Room for the River were evaluated by teams of policy scientists and consultants (ten Heuvelhof et al. 2007, van Twist et al. 2011b). In addition, a team of consultants has evaluated the design processes and output in terms of spatial quality of the programme (Hulsker et al. 2011). The findings of these evaluations have been used by the programme office to confirm its decisions and to adjust governance arrangements where necessary.

3.2 The influence of contextual factors

The context of the programme has influenced the programme design at the start of Room for the River and its governance during the execution. As described above, the extreme water levels of 1993 and 1995 triggered the decision for Room for the River. However, the vision of making more room for rivers was on several occasions questioned by engineers, economists and politicians. For example, opposing engineers argued that

the traditional approach of dike improvement has been successful for a long time and that river widening was not a proven method to provide better or cheaper solutions (Vrijling 2008). Further criticism was that a cost–benefit assessment of the approximately 700 measures that were initially considered in Room for the River’s initiation phase suggested that the programme was necessary and beneficial, but that creating more room for rivers was not the cheapest option for all river branches (Ebregt *et al.* 2005, Eijgenraam 2005). However, at that time, political decision-makers were not convinced by these criticisms and decided for realization of the programme because they argued that river widening would add more value to the river area (e.g. economic, nature and recreation) and was a more effective flood risk measure (as failure of higher dikes would result in more water in polders and thus more damage).

In the current context of economic crisis and changed political priorities, the importance of transparent and cost-effective solutions is emphasized. As a consequence, the water safety objective of Room for the River has gained more weight as being the leading objective compared with the second objective of contributing to spatial quality (see also van Twist *et al.* 2011b). This expresses itself in the idea that nature is considered a luxury in contemporary Dutch politics and the loss of, e.g. agricultural land should be reduced to a minimum. Because of this, the interpretation of spatial quality has changed within the programme from a focus on nature to a focus on agriculture.

Earlier events that took place prior to Room for the River have influenced the programme. Top-down governance approaches in delivery of the railway projects Betuweroute and the High Speed Line provoked resistance amongst local communities and politicians and led to delays which created widespread community scepticism about large infrastructure projects. This was one of the reasons for applying a combined centralized–decentralized governance approach within Room for the River. Following 2001, the response to the outbreak of foot-and-mouth disease that led to preventive elimination of cattle caused suspicion in regional communities towards the national government. In, for example, the flood bypass project Veessen–Wapenveld, this scepticism had to be overcome before gaining community support for the proposed measures.

3.3 Programme output: integration achieved?

The Dutch Parliament has required the Programme Directorate to report the progress and the output of the programme every 6 months. The 19th progress report stated on 31 December 2011, that the total cost estimate for the programme was 2170.9 million Euro compared with a budget of 2180.8 million Euro (with a margin of 10%; PDR 2011b). This means that the expenditure until completion of the programme is expected to be between Euro 2.0 and 2.4 billion (price index 2011) and within the initial cost estimates (2.2 billion Euro and a bandwidth of 37%; price index 2005). Also, the 19th progress report states

that by 31 December 2011, the investment decisions for 73% of programme budget had been made. Furthermore, it reports that out of the 39 initial projects that were described in the policy decision (PKB) in 2006, 5 had been cancelled because other projects will deliver greater water level reductions than expected, 8 are expected to be completed before 2015, 18 to be completed in 2015 and 8 are expected to have a delay of approximately 1 year (completion originally scheduled for 2015). Hence, it may be concluded that Room for the River is on track to achieve its’ hydraulic targets without budget over-run or major time delay. Hence the Room for the River programme is performing, to date, significantly better than other large water programmes in the Netherlands, such as Hoogwaterberchermings programma (HWBP) and HWBP-2 (Taskforce HWBP 2012), and other large infrastructure projects such as the Betuweroute and the High Speed Line (Hertogh and Westerveld 2010). In comparison, international comparative research showed that out of 258 large infrastructure projects, some 90% had cost overruns averaging some 20.4% (roads), 33.8% (tunnels and bridges) and 44.7% (rail; Flyvbjerg 2007).

From an evaluation of the design process, it is apparent that Room for the River also meets its second programme objective of contributing to the spatial quality of the project locations (Hulsker *et al.* 2011). The evaluation concluded that spatial quality was successfully integrated into the water safety projects in terms of dealing with agriculture, recreation, cultural–historic values and existing residences. In some cases, the projects have provided and/or improved opportunities for urban development through better connection of both sides of the river (e.g. in Lent and Deventer). According to a large number of interviewees in our research, the rationale behind the dual objective was, besides contributing to the spatial quality of the project locations, to create local support for the measures by providing local and regional actors an incentive (improved spatial quality) for collaboration. The results of the survey indicate that this has worked well: overall, the actors involved are satisfied with results of the programme, with 85% of the respondents indicating that they were satisfied or very satisfied (total average 3.96/5; standard deviation 0.69). Similarly, a survey that was carried out for the mid-term review of the programme shows significant overall satisfaction with the results in terms of technical/design aspects of the programme (3.91/5; standard deviation 0.67; see van Twist *et al.* 2011a). It could, therefore, be concluded that Room for the River has an output in which water safety and spatial quality are integrated to an extent that is satisfactory to the majority of the stakeholders involved.

Both the interview and the survey data suggest that the programme management was instrumental to the delivery of the programme’s output and outcome, but that the success of Room for the River cannot be attributed to the programme management alone. In the survey, respondents were asked to indicate to what extent several different factors contributed to the realization of the programme. From most to least (average) rated importance (5 = very important and 1 = very unimportant): sense of

urgency after the near floods of 1993 and 1995 (average of 4.3 out of 5); human factors, such as leadership, trust, political decisiveness (average of 4.19 out of 5); the connection of the water safety and spatial quality objectives (average of 4.03 out of 5); transparency and milestone management (average of 3.99 out of 5); centralized–decentralized set-up of organization (average of 3.89 out of 5); contextual factors, such as previous large infrastructure projects High Speed Railway Line and the Betuwe Railway project, the economic crisis, and reorganizations of waterboards and Rijkswaterstaat (average of 3.19 out of 5). The great majority of the interviewees confirmed the importance of the governance approach of Room for the River for delivering its results. However, several interviewees also highlighted that several factors outside the influence of programme management have contributed, such as the quality of the staff involved, leadership of individuals and the economic crisis.

As most designs have not yet been implemented it is too early to draw final conclusions about the output of the programme. Nevertheless it seems that the programme is thus far successful in achieving all its objectives. Whilst some outcomes can be attributed to Room for the River, others are the result of processes of change that were already ongoing prior to Room for the River. For example, since the 1980s, Rijkswaterstaat has increasingly emphasized the need to improve its operational excellence to make its operations more effective and efficient (see also van den Brink 2009). However, the survey results suggest that Room for the River has contributed significantly to more intensive collaboration between different government agencies (average 3.84/5, with 1 being a very low contribution and 5 a very high contribution). In addition, the interviewees shared a common view that Room for the River allocated more planning and design responsibilities to waterboards, provinces and municipalities, whilst Rijkswaterstaat took up a new role that primarily involved monitoring and facilitating to enable appropriate progress and ensure the quality of plans and designs. Overall, we have observed that the four structural factors of Room for the River's governance arrangements (Sections 3.1.1–3.1.4) are set up to promote integrated outcomes in terms of objectives (i.e. to increase water safety whilst contributing to spatial quality). A changed economic and political context has emphasized the importance of integration to achieve increased water safety in a cost-effective and transparent manner.

At the level of spatial scales, we have also identified a coherent approach within the programme. From a hydraulic perspective, all measures are connected. After the programme office concluded that at several locations more water level reduction would be achieved than planned, it advised the Vice-Minister to cancel several projects as superfluous. Also, in individual projects, such as the Veessen–Wapenveld bypass project, solutions were sought outside the project area to overcome hurdles in the planning process (agricultural land in flood-prone area was traded for a nature area outside the project area). However, this occurred only rarely. Also, with regard to spatial quality, the

coherence of the measures at a river branch level could be improved (Hulsker *et al.* 2011).

With regards to integration across temporal dimensions, we note a difference for within and beyond the duration of the programme. Overlap between subsequent planning stages was deliberately created for early involvement of actors that are normally involved during later stages of a planning process (e.g. regulators, operation and maintenance). Involved actors suggested that this reduced the length of the planning process and improved the quality of the plans and designs. However, the national government decided that Room for the River's water safety objective was fixed and left little room for considering higher river discharges in the future. It was decided by the national government in the PKB that the objective of Room for the River was to achieve a discharge capacity of 16,000 m³/s at Lobith. It should be noted, however, that during the initiation phase of the programme, an evaluation was carried out to assess if Room for the River could accommodate the passage of 18,000 m³/s in the river systems in the future, so that the realized measures could retain their functionality and have a 'no-regret' performance for a discharge of 18,000 m³/s. In addition, for three measures in the river IJssel the regional stakeholders have requested an additional analysis to assess whether the realization of the Room for the River measures can be combined with measures that already anticipate coping with a potential future discharge capacity of 18,000 m³/s (PDR 2011a). However, further work on the potential future increase of discharge capacity is being done in the Delta Programme Rivers and is beyond the scope of Room for the River.

4 Discussion

4.1 Temporary change or transition?

In addition to being a trend breaker with regards to flood risk management, Room for the River is considered an example for the implementation of multi-level governance approaches in the Dutch and international water sector. During the commencement of the planning stage of Room for the River in 2006, it was argued by policy scientists that Dutch water management was undergoing more than just temporary change (van der Brugge *et al.* 2005, Wiering and Arts 2006, Wolsink 2006). However, it was at that time also believed that it was too early to conclude that a transition to integrated water management was complete, because there was a considerable gap between strategic policy visions for integrated water management and practical implementation which was mainly attributed to governance pitfalls related to centralized planning cultures. At present, the vision for integrated river basin management is documented in the PKB (see Section 3.1.2) and executed in the planning phase, which is completed for most of the measures in Room for the River. Hence, the gap between the vision and practical implementation has largely been closed. Because of the

prominent role of the regional governments in the planning phase, it can also be argued that many of the governance pitfalls related to centralized planning cultures are overcome; regional governments rather than the national government took the lead in making planning decisions, whilst Rijkswaterstaat's main role in Room for the River has been to monitor progress and quality of the plans and facilitate if necessary. This has provided opportunities to link local ambitions with the river widening projects, whilst making use of local knowledge and relationships with the community. Furthermore, the survey results suggest that these changed relationships between governments at multiple levels are likely to be permanent. However, does this mean that a transition to integrated river basin management has been completed?

The Delta Programme that was established in 2009 and is currently in its initiation phase uses Room for the River as an example (see Deltacommissaris 2011). For example, the Delta Programme has included river widening in its portfolio of alternative options to establish long-term safety against floods. Similar to Room for the River, the Delta Programme aims to integrate multiple objectives across multiple spatial scales. With regard to integration across temporal dimensions, the Delta Programme goes further than Room for the River, in the sense that it explicitly adopts the concept of adaptive management to establish effective flood risk management over the immediate and longer term (see Deltacommissaris 2011). Furthermore, the Delta Programme has adopted a multi-level governance approach to make flood risk management a joint effort between local, regional and national government agencies and the private sector. Hence, it could be argued that Room for the River has resulted in more than a temporary change of flood risk management practice in the Netherlands.

However, based on the interview responses, we have identified a risk of losing knowledge after completion of Room for the River. According to the interviewees, much of the practical knowledge (e.g. technical knowledge about location characteristics or process knowledge about stakeholder interests and stakeholder relationships) and group dynamics that were needed to successfully complete the planning stage is tacit knowledge that is poorly documented. As such, it depends on the individuals and teams who have contributed to the realization of the plans. With most of those involved employed on temporary contracts for the duration of particular stages of the project (e.g. planning or realization stage), the Room for the River approach is not (yet) firmly embedded in the working ethos of the organizations involved. It is therefore too early to conclude that a transition to integrated river basin management has been completed.

4.2 *Is a programme an effective instrument for governing transitions?*

According to the incumbents of Room for the River, it was not an official programme objective to govern the process of change. However, in hindsight, we can conclude that the programme

plays an important role in the transition to integrated river basin management as we have described above. From a transition management perspective, this provokes the question whether programmes such as Room for the River are effective instruments for governing transitions. Transition governance requires a mix of centralized and decentralized governance approaches (Huntjens *et al.* 2012) and relies on a mix of formal rules and procedures and informal interactions between individuals (Olsson *et al.* 2006). Based on our research findings, we conclude that the Room for the River programme entails such a mix through its arrangements for 'controlled trust' (Sections 3.1.2 and 3.1.5) and facilitation to assist decentralized project teams to achieve their objectives (Section 3.1.3). The effectiveness of the governance configuration to govern a transition alters during different stages of a transformation process (Rijke *et al.* in press). Hence, the success of a programme to govern (a part of) a transition depends on capacity to signal and anticipate changed circumstances. Room for the River's cycle of justification, monitoring and facilitation (Section 3.1.4) enables the programme office to do this. Furthermore, capacity building efforts in the programme (Section 3.1.6) play an important role in increasing the interaction between stakeholders and individuals enabling discussion of experiences, problems and solutions. Hence, we can conclude that a programme such as Room for the River can be effective for governing transitions, because it combines centralized, decentralized, formal and informal aspects and is able to shift between these according to the needs. However, as described in Section 4.1, there remains a risk of losing lessons learnt when the programme is complete.

5 Conclusion

Room for the River is successfully achieving all its objectives. It is possible to conclude that it is resulting in integrated outcomes that increase water safety whilst contributing to spatial quality. It also applies a coherent approach to spatial scales. However, the ability to successfully adapt to potential larger river flows in the future has played only a marginal role in the programme. Overall, we have observed that the four structural factors of Room for the River's governance arrangements (vision, policy framework, economic justification, regulation and compliance; Sections 3.1.1–3.1.4) are set up to promote and are successfully delivering integrated outcomes in terms of objectives. The four process factors (leadership, capacity building and demonstration, public engagement and research; Sections 3.1.5–3.1.8) are enabling an integrated approach through collaborative leadership and stimulating multi-level governance approaches which are required for integrated water management.

We conclude that Room for the River plays an important role in a transition to integrated river basin management in the Netherlands. With the completion of most of the planning stage, it can be concluded that the programme has overcome the gap between strategic policy vision and practical implementation of integrated

river basin management. Also, through application of a mixed centralized–decentralized governance approach, the programme has tackled governance pitfalls related to centralized planning approaches that previously impeded integrated water management. We argue that a governance approach as applied in Room for the River can be effective for governing transitions, as it combines centralized, decentralized, formal and informal aspects and is able to shift between these according to the needs. However, we also have identified a risk of losing many of the lessons learnt when the programme is complete. Hence, it could be concluded that, since the commencement of the planning stage of Room for the River in 2006, the main challenge in terms of transition management has shifted from removing impediments to establishing continuity of the newly introduced governance approach.

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