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Progress beyond policy making? Assessing the performance of Dutch-German cross-border cooperation in Deltarhine

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ABSTRACT

This longitudinal study assesses the performance of the Dutch-German cross-border water regime using a combination of performance indicators. The regime has, despite many efforts over five decades, rarely progressed beyond policy making and hardly contributed to actual problem-solving for issues such as water pollution or river restoration. Stakeholder satisfaction is nevertheless high, showing that combined performance indicators are needed to assess cross-border cooperation, and performance cannot simply be equated with problem-solving and goal attainment. Practical policy advice is provided to progress beyond policy making, focusing on policy design, network management and the adequacy of resources (financial, human, legal) for policy implementation.

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Introduction

International rivers constitute an important natural resource shared between neighbouring countries. Looking back in history, transboundary cooperation over international rivers has been the norm rather than an exception on a variety of issues such as flooding, pollution, navigation and water resource allocation (Bernauer, 2002; Bernauer & Kalbhenn, 2010; Le Marquand, 1977; Marty, 2001; Schmeier, 2010; Van der Zaag, 2007; Verwijmeren & Wiering, 2007; Wolf, 1998). At the same time, excellent studies and overviews of the literature of transboundary cooperation have shown the mixed performance record of international river management institutions and river basin organizations, with a substantial number of institutional arrangements being described as ‘paper tigers’ and dead-letter regimes (Backer, 2006; Bernauer, 2002; Soeters, 1993; Young, 2001). Dombrowsky (2008) found that international agreements exist in nearly 40%, and river basin organizations (RBOs) in nearly 60%, of all international river basins. However, she notes, while much progress has been made in building institutional arrangements for jointly managing international rivers, their effectiveness remains opaque.

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 Supplementary data for this article can be accessed [here](#).

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In recent decades, the literature of international river basin management has moved from policy recommendations and ‘lessons learnt’ for specific river basins towards the development of explanatory models, mostly based on qualitative case studies and partly on large-*N* research. Bernauer and Kalbhenn (2010) observed that most studies focus on policy outputs such as international treaties and river basin management plans, while less attention is paid to policy outcomes, impacts and effectiveness in terms of problem-solving (e.g. flooding, water pollution, and allocation). Based on Krasner’s (1983, p. 372) definition of regimes as ‘sets of implicit or explicit principles, norms, rules and decision-making procedures’ and subsequent work on the effectiveness of international environmental regimes (Hovi, Sprinz, & Underdal, 2003; Underdal, 1992; Young, 2001), indicators of regime effectiveness have been developed and applied to international rivers, most notably by Siegfried and Bernauer (2007) and Dombrowsky (2008) focusing on water pollution, and Bernauer and Siegfried (2008), focusing on water allocation problems.

This study is concerned with evaluating the performance of a regional water regime, with respect to both policy outputs and policy outcomes of cross-border cooperation in the Dutch-German Deltarhine region. Deltarhine is one of the international river basin districts under the European Water Framework Directive (WFD), covering about a third of the Dutch-German border and three adjacent shared river systems (see Figure 1). The study area is characterized by nearly 55 years of continued and uninterrupted cooperation, and a variety of cross-border issues ranging from flood protection, water pollution and river restoration to spatial development schemes. It lends itself to a longitudinal research design with a time frame of several decades to study the outcomes of international river basin management in an empirically rich case study.

Transboundary cooperation in Deltarhine, though sanctioned at the national level, is mostly organized and shaped at the sub-national, regional level. Regional cross-border

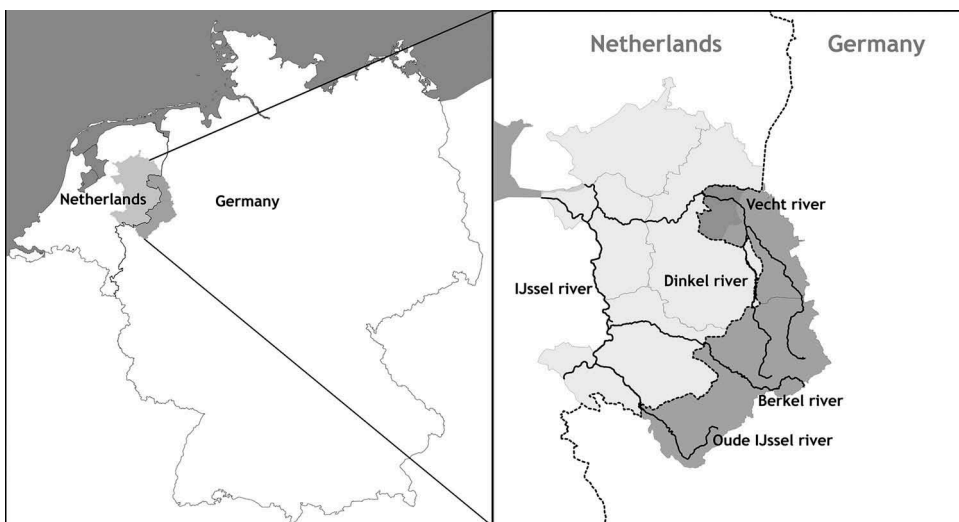


Figure 1. Overview map of the study area of Deltarhine.

cooperation deserves and merits closer attention, since international treaties and shared agreements must be domestically implemented at local and regional scales (Finger, Ludvine, & Allouche, 2006; Mostert, 2003, 2005; Skjaereth, 2000; Van Leussen, Van Slobbe, & Meiners, 2007). This study presents a longitudinal and intertwined analysis of two questions relating to the performance of the regional Deltarhine water regime:

- (a) What is the performance of the transboundary water regime in Deltarhine, particularly in terms of policy outputs and policy outcomes (actual problem-solving and goal attainment)?
- (b) What mechanisms and explanatory factors can be found to explain the observed performance since the early 1960s and what policy recommendations, if any, can be formulated?

We start in the next section by introducing and operationalizing our conceptual framework. The following section describes the methodology and data collection; the fourth describes the study area. The next two sections present the findings and our explanations for the observed performance. The last section discusses the findings, draws conclusions and provides policy recommendations.

Conceptual framework

Policy implementation: effectiveness, success and explanatory variables

In recent decades, a discourse has started to emerge in the scientific as well as the donor community on evaluating the performance and effectiveness of international water regimes. This discourse has been driven by the realization that the establishment of transboundary river basin organizations or the signing of international river basin treaties may be necessary yet not sufficient precursors to implementation and subsequently problem-solving and goal attainment in terms of improved water quality, flood protection and equitable water allocation (Bernauer & Kalbhenn, 2010; Schmeier, 2010). With a few notable exceptions (Dombrowsky, 2008; Gurtner-Zimmermann, 1998; Marty, 1997), there is a strong research emphasis on joint policy making and policy outputs, such as treaties, plans and databases, and less on studies of implementation and policy outcomes. The question of how to move beyond policy making and whether cross-border cooperation actually matters in terms of problem-solving resonates strongly with a rich body of literature on policy implementation (Hill & Hupe, 2009; Wildavsky & Pressman, 1973; Young, 2011). From both the literature on international water management and the extensive literature on policy formation and implementation it is apparent that two issues must be addressed in developing and operationalizing a conceptual framework.

First, there is a need to explicitly state the normative component of what constitutes effectiveness and success (or failure), a point explicitly discussed and analyzed by (among others) Bernauer (2002), Marty (2001), and Verwijmeren and Wiering (2007) for international river basins and by implementation researchers from a broad range of policy domains (Hupe, 2014; Kickert, Klijn, & Koppenjan, 1997; O'Toole, 2000; Provan & Kenis, 2007; Saetren, 2005). General agreement on

what constitutes effectiveness or ‘success’ in transboundary cooperation is not required (and indeed not available) as long as the values and objectives of the researcher as well as the stakeholders for any study are explicitly formulated. Otherwise, explanatory attempts and policy recommendations and advice are worthless. This study looks at both policy outputs (e.g. treaties, river basin management plans) and policy outcomes (e.g. compliance and implementation), complemented with an evaluation of stakeholder satisfaction, as performance indicators. This is further discussed and operationalized in the following section.

Second, excellent literature overviews show a diversity of theoretical approaches, explanatory models and different sets of explanatory factors for cross-border cooperation, identified by scholars and reflective practitioners (Bernauer, 2002; Bernauer & Kalbhenn, 2010; Schmeier, 2010; Verwijmeren & Wiering, 2007). This has led to open questioning of whether generalizations are feasible and experiences, explanations and policy advice can be transferred from one river basin to another. As Mostert (2008, p.13) succinctly remarked in the case of the Rhine, ‘International river basin management cannot be isolated from its economic, social and political context... Since the context in each basin differs, the problems and possible solutions will also differ.’ Thus, a generally accepted explanatory model (‘one size fits all’) is not available, though Hupe (2014) points out that there is a tendency to settle for an approach with clusters of variables such as in the Integrated Implementation Model of Winter [1990, 2012]), which will be used to operationalize an explanatory framework, as discussed in the section below.

Operationalizing the concept of performance and success

In the literature on international river management the performance and success (or failure) of transboundary cooperation has principally been defined and analyzed in terms of joint policy formation, e.g. the formulation and formalization of joint policies in international treaties, compliance with those international agreements, and the effectiveness of transboundary cooperation in terms of problem-solving (Bernauer, 2002).

Scholars of transboundary water management as well as of international environmental regimes have pointed to various pitfalls and shortcomings of each of these indicators if used separately. They have shown that the signing of treaties and joint river basin management plans is a necessary yet not sufficient precursor to implementation on the ground (e.g. paper tigers) and that cooperation can be characterized by high compliance but low performance if international agreements do not require the participants to implement policies and measures domestically. Finally, they show that the concept of ‘problem-solving’, though directly connected to the daily concerns of policy makers, engineers and practitioners, can still be rather vague and ill-defined. But even with these three criteria it is not straightforward to evaluate performance, for two reasons. First, the objectives and ambitions of cooperation may vary in different border areas and across issue areas. For some issues, the parties may strive for the exchange of information only; for other issues, they may aim at the development and implementation of joint policies. Second, parties and individuals may have different preferences and so evaluate the very same initiative and its outcomes differently. ‘Success’ then is strongly dependent on the perceptions of the stakeholders, or put differently, success

is in the eye of the beholder (Young, 2001; Marty, 2001; Bernauer, 2002; Bernauer & Böhmelt, 2014; Verwijmeren & Wiering, 2007; Dombrowsky, 2008).

This study uses three performance indicators, similar to the approach of Kickert et al. (1997), to measure and evaluate performance. The first performance indicator is *policy outputs and compliance*: whether parties live up to any agreements they made. Have they arrived at formulating joint policies, and do they comply with treaties, conventions and shared policies? The second indicator is an assessment of *policy outcomes and factual improvements* of the water system, looking at the physical changes in the water system as well as the 'no-regime counterfactual': how would the shared water system have looked if the current regime had not been put in place? (Bernauer & Siegfried, 2008; Dombrowsky, 2008; Helm & Sprinz, 2000; Underdal, 1992). Third, we are interested in *stakeholder satisfaction*: to what extent are stakeholders satisfied with performance, and what made it valuable for them to participate in transboundary cooperation? (Kickert et al., 1997; Klijn, Steijn, & Edelenbos, 2010).

Explanatory framework for observed performance

In this study we follow Winter (1990, 2012) and use a limited number of clusters of variables to synthesize the most important and promising variables into an explanatory framework with three components. Hupe (2014) has described this integrative analytical framework as an emerging standard reference in handbooks and textbooks and while it is not a theory, the framework serves as a conceptual framework and heuristic device to guide the analysis towards a handful of clusters of variables that have been identified in the research literature as important explanatory variables. In the current study, we use a simplified set of three components – context, policy design and network management – to look for explanations and crucial factors.

First we look at the *context*, as transboundary cooperation in Deltarhine is embedded in an evolving institutional, legal, political, cultural, socio-economic context that shapes and influences, positively or negatively, the cooperation but may also open windows of opportunity, especially at the regional and local scales we are interested in (Levy, Young, & Zürn, 1995). Second, we analyze *policy design*, because well-designed policies with effective instruments are needed to go beyond the adoption of symbolic policies and offer the resources to implement and achieve the agreed-on goals. Finally, we look at *network management*, where the policy implementation process, as defined by Winter (2012), in the cross-border networks depends on skilful network managers and leaders, employing a variety of network management strategies. We take a network perspective on cross-border cooperation, as sovereign central authority is absent in the context of international river basin management. The network perspective allows us to explore the horizontal dimension of mostly voluntary transboundary cooperation to arrive at international agreements, as well as analyzing the vertical dimension of domestic policy implementation by the respective German and Dutch stakeholders that possess formal authority or other relevant resources for implementing international agreements (Huitema & Meijerink, 2009; Kickert et al., 1997; Klijn & Koppenjan, 2000).

Methodology and data collection

This case-study analysis is based on four main sources of information. As a first source we examined archival records, minutes of meetings, study reports and relevant policy documents from Dutch and German water authorities as well as cross-border organizations and institutions from the past 50 years. In particular, the policy documents, studies and archival records provided in Table S3 in the supplementary online material (SOM) were examined and analyzed (BWC, 2014; SGDR, 2014; TPRW, 2014). Second, we consulted literature and publications about cross-border cooperation in the study area (Keetman, 2006; Van der Molen, 2011; Van Leussen et al., 2007; Wiering & Verwijmeren, 2013; Wiering, Verwijmeren, Lulofs, & Feld, 2010) (Table S4, SOM).

Third, interviews were carried out between 2012 and 2015 with Dutch and German stakeholders in the study area, who were selected based on an interorganizational network analysis of the project area (Van Herten, 2011) – in the Netherlands, the Ministry of Infrastructure and Environment, Province of Gelderland, Province of Overijssel, the regional Dutch Water Authorities Rijn en IJssel, Regge en Dinkel, and Velt en Vecht, 3e Berkelcompagnie; in Germany, Bezirksregierung Münster, Kreis Borken, Landesamt für Natur, Umwelt, Verbraucherschutz Nordrhein-Westfalen (LANUV), Landkreis Grafschaft Bentheim, Ministerium für Klimaschutz, Umwelt, Landwirtschaft, Natur- und Verbraucherschutz (MKULNV), Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz (NLWKN), the Vechteverband; and a Dutch-German entity, EUREGIO. After a series of exploratory interviews in 2012 and 2013, semi-structured interviews were specifically carried out for this study in 2014. Interviews were conducted in German and Dutch to make it easier for the respondents to provide detailed descriptions in their own language and express themselves precisely. In total 35 semi-structured interviews were done with respondents at expert, official and political levels (Table S5, SOM). Finally, participant observation was used, with one of the authors being involved in a supportive role in cross-border initiatives in the study area, such as the Dutch–German cross-border Vechtvision and the Transboundary Platform for Regional Water Management.

The longitudinal analysis is limited to 1960–2014, for two main reasons. The aim is not a historic study of the study area but to focus on finding generalized explanatory patterns for effective cross-border water cooperation. Also, information and data from before 1960 were hard to obtain, with archival records unavailable or incomplete and key persons retired or deceased.

The study area: regional, shared river basins in Deltarhine

The study area comprises the three adjacent regional Dutch-German river basins of Vecht-Dinkel, Berkel and IJssel, tributaries of the river IJssel, itself part of the delta of the Rhine. Water-related issues in the study area are flood protection, hydromorphological degradation due to extensive river regulation, and water pollution of surface waters, mostly from diffuse sources. Cross-border cooperation in Deltarhine can be placed in a broader institutional, socio-economic, historical and cultural context with sometimes marked discontinuities and differences at the border, described elsewhere in detail (Renner, Meijerink, & Van der Zaag, 2017a). Table S1 in the SOM provides a

tabular overview of the main contextual characteristics and a detailed description of problem pressure in major issue areas.

Over the past 50 years, at least 20 different cross-border cooperation venues and institutional arrangements have been created, strongly anchored in the regional level. Elsewhere we have described in more detail the slow evolution of a fragmented Deltarhine regime into a more integrated and coherent one (Renner & Meijerink, 2017; Renner et al., 2017). Table S2 in the SOM provides a detailed, tabular overview of the various venues for transboundary cooperation that have been created over the years and are parts of the regional transboundary water regime (Krasner, 1983). We can discern four different kinds of venues, which we briefly describe, as they pertinent to our indicators of policy outputs and compliance.

First, we find venues for communication, information and knowledge exchange, agenda setting and joint policy making, such as the Dutch–German border water subcommissions, the WFD Steering and Working Group for cross-border coordination, and the Transboundary Platform for Regional Water Management. Second, a substantial number of cross-border river development projects and integrated planning exercises have been carried out for individual river basins. Most of them not only formulated joint visions and even transboundary master plans for river development, but also resulted in programmes and packages of measures to be implemented. Since the mid-1990s we find policy-making and planning exercises such as the Dinkelplanning, Schoonebeekerdiep, Transboundary Vechtvision, Canalvision and the Glanerbeek project (Table S1, SOM). Third, a substantial number of transboundary hydrological modelling projects, meant to broaden the knowledge base, prepare the ground for joint policy making and coordination of measures, or to provide operational tools for example in flood forecasting, have been carried since the late 1980s. Finally, we can identify initiatives loosely connected to the mentioned venues of cooperation, such as Dutch-German Action on Flood protection, triggered by a large-scale flood event in the regional river basins in 2010, and a Dutch-German pilot project on combating diffuse agricultural pollution (nutrients and pesticides) (BWC, 2014; SGDR, 2014; TPRW, 2014).

Summarizing, we see a rich and diverse tapestry of venues at the local and regional level. Literally hundreds of Dutch–German meetings have taken place in the past five decades on the political, policy and expert levels, witnessing sometimes very intensive cooperation efforts. The network analysis of Van Herten (2011) and examination of policy documents show that nearly all of these venues have been initiated and orchestrated by a limited number of network actors, mostly regional government authorities. Other stakeholders and network participants, such as NGOs or research institutes, have played a largely passive, participating role.

Findings

Three indicators of regime performance are described in the following: policy outputs and compliance (with rules, procedures, treaties and shared policies); policy outcomes and actual problem-solving and the ‘no-regime counterfactual’ (how the shared water system would have looked if the current regime had not been in place); and stakeholder satisfaction (how satisfied respondents are with the Deltarhine regime).

Policy outputs and compliance

What is the evidence, from policy documents and interviews, that the German and Dutch partners parties have reached formal agreements, concluded treaties, and entered into binding arrangements? And furthermore, have any joint agreements been complied with and been translated into domestic policy making, planning and investment schemes?

We find that binding border water treaties (*Grenzwässervereinbarungen*) were only concluded from the 1960s until the late 1970s, focusing mostly on operational water management issues. Since then various efforts have been made to tackle more intricate, intractable and integrated issues such as water pollution, river restoration and river development; as witnessed by preparatory studies, master plans, cross-border policy making and planning exercises, and other Dutch–German policy documents. However, no evidence was found of binding, formal joint visions, plans or investment programmes. In short, the richness of cross-border venues, is hardly mirrored in binding policy outputs with a discernible impact on domestic or joint policy making. The European guidelines, such as the WFD, which advocate an integrated river basin approach and obligate cross-border coordination, do not yet play a catalyzing role in harmonizing policies or implementation measures. The German and Dutch water authorities pursue their own domestic policies, planning exercises, and only very recently (from 2013 onwards, stimulated by the Transboundary Platform for Regional Water Management and the WFD Steering group) have the first steps been taken to coordinate and align measures, for example for river restoration and fish migration (BWC, 2014; Renner et al., 2017; SGDR, 2014; TPRW, 2014).

On compliance with formal or informal agreements, cross-border cooperation performs well, based on interviews and available policy documents. The border water subcommissions are seen by the majority of respondents as having fulfilled their task of structural knowledge exchange, communication and mutual understanding (social learning, trust building), as well as checking compliance with the binding water treaties from the 1960s and 1970s. These international treaties are still in force and complied with (BWC, 2014). Similarly, the institutional arrangements for the introduction of the WFD are judged, by the majority of respondents, to be effective in terms of knowledge exchange on technical matters (e.g. water quality standards) and national policies (transposition of the WFD into Dutch and German legislation). The agreed-on procedures are complied with to coordinate the introduction of the European guidelines into national plans and procedures, with the clear caveat that cross-border harmonization of goals and implementation measures was neither intended nor realized (SGDR, 2014). In Tables S6, S7 and S8 in the SOM, the various policy outputs and their (non)binding nature are listed and described in detail.

Policy outcomes and problem-solving

The international water treaties of the 1960s and 1970s have the status of international treaties and are legally binding for Germany and the Netherlands. Other than that, there are no examples of formally adopted joint policies or treaties, and hardly any formal joint targets, for example for water quality, which could serve as a collective

optimum and against which we could measure effectiveness and calculate effectiveness scores such as by applying the so-called Oslo-Potsdam solution (Dombrowsky, 2008; Helm & Sprinz, 2000; Hovi et al., 2003; Underdal, 1992; Young, 2001). Respondents were asked about the no-regime counterfactual and to provide examples, if any, of transboundary cooperation resulting in problem-solving in major issue areas such as water pollution, flooding or river restoration. In particular, respondents were asked to specify how the shared water system would have looked had the current regime not been in place, and what has changed physically in the river basin in the past decades because of cross-border cooperation.

The vast majority of respondents (80%) stated that cooperation has had, until now, only a negligible impact on the physical water system. Factual improvements in the river basins are directly attributed to the respective domestic policies and not to cross-border cooperation. Transboundary communication, information exchange and coordination have not led, in their view, to changed Dutch or German policies at the regional and local scale, and the respondents see only a negligible direct or indirect impact on their own policy making and policy implementation. The other respondents (20%) named a number of initiatives and projects which in their view may have contributed to problem-solving in Deltarhine, but still to a very limited extent. These cases are shortly discussed below.

We find that cross-border cooperation in the past 55 years has contributed only to a very limited extent to problem-solving in Deltarhine, i.e. with a few joint projects in the close vicinity of the border. The respondents agreed nearly unanimously (95%) that the Deltarhine regime has had, until now, only a marginal impact on their daily practice of water management and has not (yet) changed their domestic policies, planning exercises or implementation programmes to a noticeable extent. Only one transboundary project (Glanerbeek), directly on the Dutch–German border, was identified as having contributed to water-related problem-solving (river restoration), and only one policy and planning project in the Vecht-Dinkel, the Transboundary Vechtvision, was identified as having aligned German and Dutch measures to some extent, stimulating Dutch implementation projects and instigating a joint river restoration project at the border (in the *Grenzmäander*, or ‘border meanders’) (TPRW, 2014). The Deltarhine regime has had a very limited impact on problem-solving in all major issue areas (water pollution, flood protection and river restoration), with the exception of the mentioned water treaties from the 1960s and 1970s dealing mainly with operational water management issues (dredging) of a limited number of river stretches in the close vicinity of the border. More intractable problems, such as water pollution from agricultural land use or river restoration, have not been jointly tackled and solved. There are no indications that cross-border cooperation has yet led to joint formal policies or resulted in specific domestic measures (SGDR, 2014; TPRW, 2014).

We also consulted trend analyses of major pollutants (heavy metals and nutrients) revealing improved water quality in the Vecht-Dinkel, Berkel and Issel Rivers since the beginning of the 1980s, when implementation of the European Urban Waste Water Treatment Directive started. Data from the annual monitoring reports of the border water subcommissions (Dutch-German Monitoring Reports, 1976–2004) and long-term trend analyses carried out by the regional water authorities (BWC, 2014; Vechtstromen, 2014; WRIJ, 2008) clearly demonstrate these positive developments. But analysis of

cross-border policy documents such as treaties and planning and modelling studies, as well as archival records, revealed no correlation between regional cross-border cooperation and improved water quality. Respondents unanimously corroborated this finding by stating that improved water quality was due to European and national legislation, and could not be attributed to cross-border policy making. More detailed information on problem-solving in major transboundary issue areas as well as on respective agreements and joint policy documents is presented in Table S7 in the SOM.

From policy documents and interviews it became clear that the impact of the water regime on actual problem-solving was limited, and respondents were asked to react to this finding and to offer their own interpretations. First, respondents, especially those from the German side, noted that the respective Dutch and German laws, norms and standards restricted policy freedom at regional and local scales, sometimes severely, limiting the possibilities for harmonizing goals and measures across the border. Second, respondents pointed out that transboundary cooperation should be seen as a long-term endeavour, spanning decades and generations, only slowly building up towards joint problem-solving. Finally, they noted that, prior to this study, no structured introspection or evaluation of the effectiveness of the Deltarhine regime had taken place – this despite a growing recognition since the mid-2000s that Dutch–German cooperation should not be limited to information exchange and communication but focus on jointly tackling problems and action on the ground. German and Dutch respondents were generally in agreement with the above conclusions. There was however a stronger urgency for the Dutch downstream partners to progress beyond knowledge exchange and policy making towards policy implementation and problem-solving, and thus to address the daily concerns of water managers on both sides of the border.

Stakeholder satisfaction

In the preceding sections we reported that the Deltarhine regime is characterized by intensive communication and information exchange, but with few examples of binding treaties and joint policy making, and even fewer examples of joint or domestic projects that can be attributed to transboundary cooperation, and a negligible impact on problem-solving. How satisfied, then, are respondents with the Deltarhine regime?

Respondents unanimously stated that they regarded the cross-border cooperation between German and Dutch partner in Deltarhine as valuable and necessary and expressed satisfaction with the regional water regime. Three main reasons were given. First, respondents stressed the importance of communication as well as knowledge and information exchange: ‘We get to know who the respective partners in the river basins are and what they are doing’, as one respondent put it. Coordination and communication *about* rather than harmonization *of* respective goals and measures was seen as an important objective of cooperation in Deltarhine. The formation and existence of the cross-border regime, including its various venues, was regarded as intrinsically valuable. Second, cross-border cooperation is regarded as important and valuable in terms of building close professional relationships, trust and social capital. Some respondents also referred to the fact that shadows of World War II have faded only in the last decades, and stressed the inherent value of good neighbourliness and improved working relationships across borders to know each other. Third, respondents mentioned the value of

social and professional learning for them personally, expanding their intellectual horizons and knowledge base as well as enriching their personal experiences.

Summarizing, transboundary cooperation in Deltarhine was seen as well performing (and a success) by the vast majority of respondents in terms of communication and mutual understanding as well as information and knowledge exchange. These are seen as the most important results of the regime in the past, and social learning, enrichment of personal experience and knowledge are specifically cited as essential and valuable results. Equally important to the majority of respondents are trust-building and creating long-lasting personal and working relationships. The majority of the respondents became aware of the limited contribution of the water regime to joint policy making and actual problem-solving only upon reflection triggered during the interviews. For some respondents, in particular the Dutch regional water authorities, this was seen as a major challenge for the coming years and decades, i.e. to make the regime actually matter. At the same time, it was stressed by some respondents that the regime moves, though slowly, towards joint problem-solving and that this process would unsurprisingly require generations, in particular when considering the dramatic geopolitical episode the region experienced only three or four generations ago.

Understanding the observed regime performance

In the preceding section we analyzed the performance of the cooperative efforts in Deltarhine, finding a relatively high policy output and stakeholder satisfaction, yet hardly any progress beyond non-binding policy formulation towards implementation and a negligible contribution to problem-solving. What explanations can we find for these observations? Based on the integrated implementation framework of Winter (1990, 2012), three dimensions or clusters of variables are discussed in the following: context, policy design, and network management. These components are complemented by a fourth dimension, resources, as further explained in the section on resources below.

Context

Cross-border cooperation is embedded in an evolving institutional, socio-economic and legal context that has shaped and influenced the performance of the Deltarhine regime. The institutional setting in which cross-border cooperation in Deltarhine is embedded has had a major impact on its performance. On the German side, we find a fragmented institutional landscape regarding responsibilities and resources for policy formulation and implementation, sometimes divided over as many as four institutional layers (Table 1). This has not had a positive influence on cross-border policy making and implementation. In the past 20 years an apparent institutional mismatch has begun to emerge between the Dutch and German institutional structures. The Dutch regional water authorities have evolved through various mergers in the past decades into strong entities, with not only considerable human and financial resources but also legal authority for water policy formulation as well as implementation at the regional level.

The more governance-oriented, decentralized approach to water management of the Dutch collides at the border with a relatively traditional, hierarchical top-down

Table 1. Institutional structures in the water sector in the Netherlands and the German federal states of Lower Saxony and North-Rhine Westphalia (based on Van der Molen, 2011).

North Rhine-Westphalia	Lower Saxony	The Netherlands
Federal level	Federal level	Ministry of Infrastructure and Environment + Rijkswaterstaat
MKULNV + LANUV	MUNR + NLWKN	
Bezirksregierung (regional district)		Provinces
Kreis (municipal district)	Kreis (municipal district)	
Verbände (associations) + municipalities	Verbände (associations) + municipalities	Dutch water authorities + municipalities

setting in Germany and a legalistic tradition where the policy freedom of regional water authorities is limited (Renner et al., 2017). The peripheral and regional character of the rivers on the German side has resulted in relatively low policy and investment priorities regarding flood protection and river restoration in trans-boundary rivers, which holds especially true for the federal German state of Lower Saxony in the past decade. In the socio-economic context, the introduction of the European INTERREG funding scheme greatly stimulated hydrological modelling projects in the 1990s and cross-border projects to formulate joint policy documents for socio-economic development of river basins in the 2000s. These opportunities and new venues for transboundary cooperation were especially used by the Dutch partners to initiate new projects and work towards joint policy making. However, INTERREG is designed as an instrument to further territorial cohesion in the border regions of the European Union and not as funding instrument for cross-border policy *implementation*. Therefore, INTERREG has not been able to play a stimulating role in implementing costly measures on the ground, e.g. infrastructural works and land acquisition. In terms of an overarching legal framework, the German–Dutch border treaty of 1960 has provided a valuable, consistent and enabling basis for information and knowledge exchange through the German–Dutch border water subcommissions, though the mandate of these commissions was never extended to joint policy making and implementation. The introduction of the WFD in 2000 opened new venues for transboundary cooperation and required coordination and information exchange. However, the WFD does not require harmonizing policies, objectives or programmes of measures, and so facilitated and stimulated a very intense information and knowledge exchange in Deltarhine, but has not catalyzed or furthered any harmonization or joint policy making.

Policy design

Very few examples of binding cross-border policy documents can be found, and with the exception of the water treaties of the 1960s and 1970s there are hardly any plans, treaties or agreements that contain clauses or stipulations regarding implementation through either joint or domestic efforts. In other words, the well-designed policies and agreements that Winter (2012) deemed essential, containing effective policy tools and instruments for implementation, are missing. The overwhelming majority of cross-border policy documents are thus rather symbolic in nature: they describe possible

long-term goals, without actually offering the resources and means necessary to achieve them. Cross-border policy documents have thus had, with very few exceptions, only a negligible impact on domestic policies, planning and investment priorities.

The formulation of joint policy documents itself runs into problems, as the respective Dutch and German legal frameworks severely restrict policy freedom at regional and local scales: water quality standards differ, investment priorities for flood warning systems and wastewater treatment are different, and domestic guidelines for fertilizer application at the national level cannot be changed. These differences make it difficult to develop joint approaches and targets for water management challenges. The WFD for example has provided Dutch and German counterparts with a common technical language and jargon, but has not led to the harmonization of their respective water policies. This is caused by different transpositions of the European legal framework into national laws and regulations. Since 2010, there is even a tendency (identified by some German partners) to limit regional cooperation to the joint coordination and reporting requirements under the WFD, reducing instead of boosting the ambition of joint river basin management.

Finally, we find that where institutional agreements such as the early water treaties have been entered into by German and Dutch partners, compliance with these agreements is high, bearing witness to high trustworthiness on both sides. However, precisely because of their reliability and commitment to compliance, the Dutch and especially the German parties are hesitant to enter into any agreements which they might not be able to fulfil, especially where more intractable problems in the realm of integrated water resources are concerned (Bueren, Klijn, & Koppenjan, 2003).

Network management

The literature on international water management is largely silent on the role of key individuals, policy entrepreneurs or network managers, with very few exceptions (Mostert, 2008; Van der Molen, 2011). But respondents for this study stated nearly unanimously that throughout the decades, key individuals such as network managers but also ideational leaders have been crucial in shaping cross-border cooperation and had a decisive role in performance. As one respondent put it, 'It is people and their skills that decide the success in cooperating across borders. When key individuals leave we feel the loss directly.'

From the interviews held for this study, and from policy documents and other publications in the study area (Van der Molen, 2011; Van Herten, 2011; Van Leussen et al., 2007), it is estimated that about 30 individuals at the expert, official and political levels have actively been shaping the Deltarhine regime in the past decades using a variety of entrepreneurial and network management strategies. The identified network managers are almost exclusively civil servants and elected officials in regional Dutch and German authorities, such as Dutch water authorities (*Waterschappen*), provinces, state districts (*Bezirksregierung*) and districts (*Kreise*), and in the past two decades there have been markedly more network managers from the Dutch side. For this, respondents offered three explanations: more urgency of the Dutch downstream partners to jointly manage the river basins; more financial and human resources in the regional Dutch water authorities to initiate and organize cross-border cooperation; and a strong

tradition of policy entrepreneurship in the Dutch water sector (Brouwer, 2015; Renner & Meijerink, 2017).

The key individuals identified mostly have a professional background in policy making, hardly ever in policy implementation. They employ their skills to work towards Dutch–German policy preparation and policy making. But with few exceptions (Glanerbeek project), their activities do not cover the next step towards domestic policy implementation and evaluation. The partly separated worlds of policy formulation and policy implementation are set even further apart in the international and domestic setting of transboundary cooperation (Putnam, 1988; Skjaereth, 2000). While network managers take into account the respective domestic policy and investment priorities in the cross-border policy debate, they are hardly ever involved in the iterative process of changing or adapting domestic planning and implementation procedures. As one respondent remarked, ‘The people involved in domestic policies and planning and responsible for investment planning should be involved directly in the Dutch–German policy debate!’ This provides an explanation for the described lack of specificity of implementation arrangements and financial stipulations (see the section on Policy Design).

Resources

In our original conceptual framework, we subsumed the needed resources under the concept of network management (see the section on explanatory framework for observed performance), but from interviews and policy documents it became clear that our original conceptual framework would benefit from explicitly including an analysis of *implementation resources*. Respondents, in particular, pointed out the importance human resources (available personnel and expertise), financial resources (land acquisition, investment in infrastructural works), spatial resources (property rights) and legal resources (formal authority, policy instruments and tools) as essential to move towards implementation.

There is a pronounced skewed distribution of financial resources between the German and the Dutch partners, due to the different institutional settings, described earlier, with strong Dutch regional water authorities, which are levying their own water taxes, and on the other hand the fragmented responsibilities and resources on the German side. German respondents nearly unanimously mentioned a lack of resources available at the German regional level to invest in cross-border policy making, and especially in policy implementation. Legal responsibilities and financial resources for planning and implementation are divided over sometimes as many as four institutional layers, e.g. municipalities (*Kommunen*), districts (*Kreise*), state districts (*Bezirksregierung*) and the federal level. This has become a fundamental challenge for domestic policy implementation in the water sector in Germany, and at the same time has made it more difficult for German partners at the regional level to enter into any (binding) agreements with the Dutch partners that may lead to cross-border obligations in implementing measures.

Human resources were also cited as insufficient on the German side, especially in the past two decades, to participate in cross-border cooperation with the same intensity as their Dutch counterparts. The lack of human resources on the German side has also

become apparent in initiating and guiding time-consuming projects such as land acquisition and consolidation procedures needed for river restoration. Lack of spatial resources, in particular where property rights of other stakeholders such as farmers are concerned, has hindered efforts in river restoration and in addressing agricultural diffuse pollution and has stymied planning efforts such as the cross-border Dinkelplanning (Wiering et al., 2010), the Schoonebeekerdiep and other river development or restoration schemes.

Finally, there is marked difference in resource allocation between policy formulation and policy implementation. The considerable investment of human and financial resources in agenda setting and policy preparation (development of transboundary hydrological models and knowledge bases) as well as policy formulation (spatial planning exercises such as Berkelvision and Canalvision) has not been matched by domestic or joint investment programmes for implementation.

Discussion and conclusions

Performance, effectiveness and value of the Deltarhine regime

In this study, we have used a set of three performance indicators to measure regime performance: policy outputs and compliance; policy outcomes and actual problem-solving; and stakeholder satisfaction. We find that studies, reports, visions and master plans, as well as a limited number of water treaties, have been major results of transboundary cooperation in the past five decades. However, despite many efforts over five decades, the Deltarhine regime has rarely progressed beyond policy making and hardly contributed to actual problem-solving for the major water-related issue areas such as water pollution from point and diffuse sources, flood protection and river restoration. There has been discernible, though incremental, progression and evolution over the past decades, from mere compliance with contractual obligations regarding operational water management issues, towards joint problem definition, and attempts at joint policy making and integrated planning. But these efforts have yet to bear fruit in terms of actual problem-solving on the ground (see the section 'Policy Outcomes and Problem-Solving'). This finding is in line with the limited performance and effectiveness of cross-border cooperation in international river basins in other developed and developing countries, where policy implementation and (joint) action on the ground are lacking (Backer, 2006; Bernauer, 2002; Dombrowsky, 2008; Grey, Sadoff, & Connors, 2016; Wiering & Verwijmeren, 2013; Young, 2001). Nevertheless, respondents nearly unanimously stated that the Deltarhine regime has brought great value in terms of knowledge and information exchange, and social and policy learning, as well as enriching their personal and professional experiences. They acknowledge that cross-border cooperation may have led to an indirect aligning of national objectives, but that it has not yet changed their daily practice of water management.

These findings lead us to reflect on the use of three combined indicators for regime performance. High stakeholder satisfaction clearly contrasts with the limited impact of cross-border cooperation, and strongly emphasizes the methodological necessity to distinguish between various indicators of performance and success (or failure) in cross-border cooperation (see the section 'Stakeholder Satisfaction'). There is thus no

clear-cut simple picture to conclude that cooperation in Deltarhine is successful or unsuccessful. The limited number of binding treaties and joint implementation projects may lead us to conclude that the regime is underperforming. On the other hand, high compliance with the (few) water treaties and agreed-on procedures would indicate well-performing, effective cooperation mechanisms. Or should we look at the limited impact of cross-border cooperation on the daily practice of German and Dutch water management, respectively? The normative ambition to make international water regimes matter (Young, 2011) is here contrasted with stakeholders who value cross-border cooperation in different terms and are satisfied with it.

In summary, our findings show that it is of added value to take into account all three performance indicators in order to paint a complete picture of both the *value* of cross-border cooperation to stakeholders and the *performance or effectiveness* of a particular water regime.

Explanatory factors and policy recommendations to progress beyond policy making

In this study, we have applied an analytical framework from the literature on policy implementation networks to find explanations for observed performance and where possible to provide policy advice and recommendations. Our analytical framework was based on a lumped-variable approach with a limited number of dimensions, such as context, policy design and network management, which we expanded with the concept of implementation resources. Regarding the latter, we find that the availability of sufficient domestic resources (financial, personnel and legal) is key to move beyond policy making towards problem-solving and implementation of measures, as joint water policies must be domestically implemented, i.e. the two-level game must be played (Putnam, 1988).

Looking for explanatory factors for low performance in terms of joint and binding policy making and problem-solving, we find first that contextual factors play a strong role. Joint policy making at the regional level is constrained by the respective national regulations and norms, for example regarding water quality, restricting the degrees of freedom in regional policy making. The European water guidelines have surprisingly not (yet) played a substantial catalyzing or harmonizing role in that regard. Second, we find that transboundary policies have been insufficiently well designed with regard to implementation. Cooperation efforts have in general not resulted in effective policy instruments or agreements providing resources to achieve agreed-on objectives and policy changes on the ground. Third, we report that network managers and their network management strategies are an indispensable factor for any transboundary cooperation to occur and to succeed. What we found in the study area is that these key individuals are indeed present, but mostly in the phase of policy formation; they are much less involved in policy implementation. Trying to bridge this well-known divide between policy formulation and implementation is then also one of the major challenges and policy recommendations to increase the effectiveness of cross-border cooperation in the study area. Fourth, the availability of sufficient resources (financial, personnel and legal) is key to move beyond policy making towards joint or domestic

implementation of measures. This is a necessary factor, though in itself not sufficient, to jointly address and solve cross-border water management challenges at the regional scale.

Recommendations

Based on these findings, we offer seven recommendations regarding policy design, network management and resources on how to progress beyond policy making:

- (1) Continue the decade-long track record of intensive cross-border cooperation and building of new venues for cross-border cooperation, but also take care to discontinue or restructure obsolete and underperforming cooperation processes (e.g. coordination and implementation of the WFD).
- (2) Pay more attention to implementation aspects when working towards joint policy documents, and in particular seek to revive the tradition from the 1960s and 1970s to have binding agreements with clear stipulation of mutual obligations.
- (3) Nurture and continue the strong tradition of having skilled key individuals as active network managers and policy entrepreneurs bridging the cross-border divide and actively initiating and steering cross-border policy networks.
- (4) Involve key individuals not only in the policy preparation and formulation phase but also in the policy implementation phase to progress beyond policy making.
- (5) Make the available financial, human, spatial and legal resources a cornerstone of cross-border policy documents to jointly tackle water pollution issues, flood prevention and forecasting as well as river restoration and climate adaptation.
- (6) Investigate (by the German partners) how the fragmented German institutional landscape in the water sector and the splintered legal responsibilities for policy making and policy implementation can be streamlined.
- (7) Evaluate regularly, e.g. every five years, what the actual outcomes of cross-border cooperation have been, combined with a survey of stakeholder satisfaction.

While specific policy recommendations are not easily transferrable to other river basins (Mostert, 2003), our overall approach of using a lumped-variable approach looks promising to deal with the variety of explanatory factors for performance or success (and failure). It is suggested to further develop an exploratory framework, based on a limited set of explanatory factors or key dimensions, to be applied in a large-*N* research study looking at regional shared river basins world-wide.

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No potential conflict of interest was reported by the authors.

Geolocation

Dutch-German part of the Rhine basin, tributary IJssel River.

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