

# ‘A dive into floods’: exploring the Dutch implementation of the floods directive

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## Abstract

In recent years the number and frequency of high-impact floods have increased and climate change effects are expected to increase flood risks even more. The European Union (EU) has recently established the Floods Directive as a framework for the assessment and management of these risks. The aim of this article is to explore factors that have hampered or stimulated the implementation process of the Floods Directive in the Netherlands, from its establishment in 2007 until January 2013. During this period, the first requirements of the Floods Directive had to be implemented, while the second and third obligations were to be in an advanced stage. Following a literature review of policy implementation theories and a content analysis of the Floods Directive, we have studied the implementation processes in the Dutch part of the Meuse and Rhine-West catchments. Perceptions of interviewees and survey respondents were used to identify influential factors. Our research shows that although the implementation process in the Netherlands is on schedule, it is iterative and complex. Various constraining and stimulating factors, affecting the implementation process, are distinguished. The article concludes with some suggestions for improving the further implementation of the Floods Directive.

**Keywords:** Flood risk management; Floods Directive; Meuse river basin; Policy implementation; Rhine river basin; The Netherlands

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## Introduction

Over the last few decades, damage due to floods has increased worldwide (Kundzewicz *et al.*, 2010). Currently, flooding is Europe’s most frequently occurring disaster in comparison with other forms of natural disasters, such as storms and earthquakes. Floods cause the most economic damage and affect the greatest number of people. Between 1998 and 2009, Europe suffered from approximately

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200 major damaging floods causing over 1,100 deaths; as many as 47 of these major disasters caused economic damage equal to 0.005% of the European Union (EU) gross domestic product. Consequences of climate change in river basins are uncertain: so far, various studies predict that high-impact floods will occur more frequently as a result of changing precipitation patterns. Moreover, the impacts of flooding are expected to be even greater than previously, since people, wealth and businesses are increasingly moving to vulnerable regions (Barredo, 2007; Mostert & Junier, 2009; Kundzewicz *et al.*, 2010; Tilche, 2014). The Netherlands is a vulnerable region in Europe with regard to floods, since the country is located in a delta area with four medium-size, international rivers that flow into the North Sea. In 1993 and 1995, some parts of the country's Rhine and Meuse basins were almost completely flooded and in 1995, 250,000 inhabitants were evacuated (Wiering & Arts, 2006). The Meuse is a rain-fed river and thus more vulnerable to discharge fluctuations than the Rhine, which is a combined rainfall and melt-water river. However, due to a changing climate, the Rhine regime is also shifting towards a mainly rainfall river, leading to increasing flood risks (Middelkoop *et al.*, 2001; Pfister *et al.*, 2004; te Linde, 2011). In both basins, riverine floods could occur and the Rhine-West basin is also vulnerable to coastal flooding. Both (sub-) river basins are studied in this research (Figure 1). In addition, there are more examples of flooding from all over Europe that drew attention to this issue and pushed for a paradigm shift from flood protection towards flood risk management, such as the Oder river floods in 1997 and the flooding in 2002 by the rivers Elbe and Danube. More recent floods were in May and June 2013 in central Europe after heavy rains (Elbe and Danube basins) and in May 2014 in the Sava river basin. Following Dutch and French initiatives and as a reaction to extreme floods of recent decades, the EU placed flood risk management on its agenda (Dworak & Görlach, 2005; Mostert & Junier, 2009; Van de Glind, 2009; Schelfaut *et al.*, 2011; Heintz *et al.*, 2012; Hartmann & Juepner, 2014). The EU Floods Directive (FD) (2007/60/EC) was established to provide a framework for the assessment and management of flood risks to reduce the adverse consequences of floods (Directive 2007/60/EC,

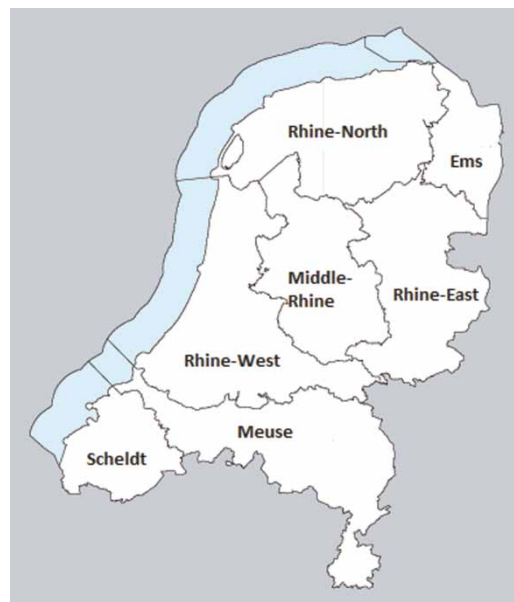


Fig. 1. The Rhine-West and Meuse basins in the Netherlands (Source: Watervragen, 2014).

2007; Klijn *et al.*, 2008; Mostert & Junier, 2009). The FD is less complex than the Water Framework Directive (WFD) and leaves room for individual Member States to take national circumstances and policies into account (Mostert & Junier, 2009). However, transposition and practical implementation of a Directive still present a difficult and complex challenge, and actors often clash over the meaning and consequences of a policy (Bursens, 2002; Dimitrova & Rhinard, 2005; Falkner *et al.*, 2005; Beunen *et al.*, 2009). Policy implementation is even called ‘the most devilish of all wicked problems’ (De Leon & de Leon, 2002: 468). Implementation literature points to very different factors influencing the implementation process. The central question of this article is, therefore, which factors could have hindered and/or stimulated the FD’s implementation in the Netherlands? The aim of answering this question is to gain a better understanding of the progress of the FD’s implementation process and to produce recommendations for future implementation. So far, research about the practical implementation of the FD in the Netherlands is limited. This article addresses this knowledge gap and seeks to provide a first exploration. By combining insights from different theories, this research could also contribute to the ongoing scientific discussion about the implementation of EU governance.

In the first section of this article we clarify the chosen research approach, and in the second section we describe the theoretical background of our study and relevant factors that have been selected from Europeanization and policy implementation theories that might influence the implementation process of EU Directives. In the third and fourth sections we present the contents of the FD and we analyse its current implementation level in the Netherlands. In the fifth section we give an overview of stimulating or hindering factors for the implementation process. This paper ends with a discussion of our findings and some concluding remarks.

## Methods

Figure 2 depicts the research steps that were taken to study the implementation of the FD in the Netherlands (as the dependent variable). First, Europeanization and policy implementation theories were reviewed to select factors influencing policy implementation processes (as the independent variables). A total of 23 factors were identified and operationalized. Second, a content analysis of the FD revealed its implications for the Netherlands. Following these steps, the researchers made assumptions concerning

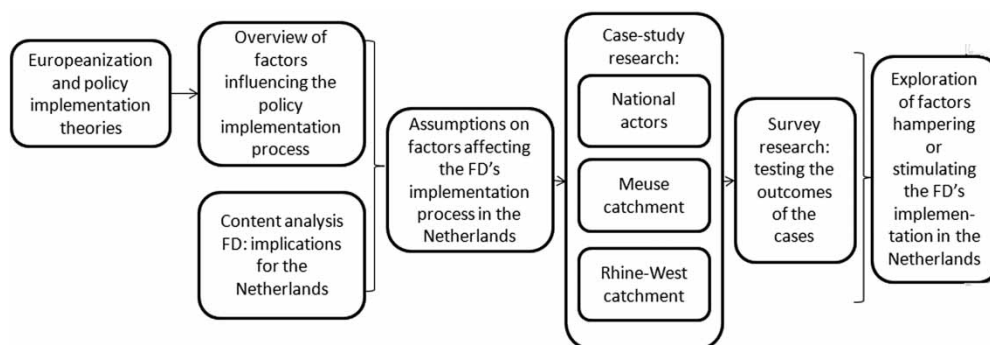


Fig. 2. Overview of the research steps.

the expected influence of the previously found factors on the FD's implementation in the Netherlands. Those assumptions were used to structure the empirical research, consisting of a study of the FD's implementation processes in two case-study areas: the Dutch parts of the Meuse and Rhine-West river basins. By comparing the process in those areas we hoped to find communalities in implementation practices in the Netherlands and explore hampering and enabling factors. We have tried to increase the research validity by data triangulation. Apart from analysing secondary literature, policy and legal documents, interview-based scanning of what interviewees consider to be relevant and influential factors is applied. A total of 35 face-to-face, in-depth, semi-structured interviews with key stakeholders directly concerned with the implementation of the FD were held. Regional actors (a municipality, safety regions, regional water authorities and provinces) in the Meuse river basin, in the Rhine-West catchment, and organizations having responsibilities in both basins were represented, and interviews were held with the Ministry of Infrastructure and Environment (I & M), its Public Works Department, the EU, and other actors that could provide a 'helicopter view' of the implementation process<sup>1</sup>. Additionally, an online questionnaire was used to check the generalizability of the case-study results – 47 respondents out of a possible 65 water managers concerned with the FD's implementation in the Netherlands returned a completed survey. Both research strategies applied a different analysis method, deriving quantitative data from the survey and qualitative data from the case-study research. This mixture of methods produced a comprehensive and representative exploration of factors affecting the FD's implementation process in the Netherlands, from its establishment in 2007 until January 2013.

### Policy implementation influencing factors: a literature review

Most EU implementation literature will confirm that the impact of an EU rule can be rather diverse across different Member States (Héritier *et al.*, 2001), due to complexities in the implementation processes. A mixture of variables could explain variations in implementation processes (Falkner *et al.*, 2005; Beunen *et al.*, 2009). Academic literature distinguishes, from different angles, various stimulating and hindering factors for the implementation of EU Directives. By combining these factors, we may gain a better understanding of implementation processes (Falkner *et al.*, 2005; Zwaan, 2012). Four main theories of Europeanization research have been studied in this research to identify possible influential factors, namely: traditional (domestic) implementation literature; rational choice institutionalism; social normative institutionalism; and the institutional processual approach. Each school is described in this text and the distinguishing factors are summarized in Table 1.

The first school understands implementation first and foremost as an administrative, apolitical execution of decisions, and assumes that implementers are in principle willing to conform and that national administrations, structures and the role of other administrative variables, such as political culture, will determine the implementation level (Jordan, 1995; Matland, 1995; Siedentopf & Ziller, 1998; O'Toole, 2000; Zwaan, 2012).

The second and third schools – rational choice and social normative institutionalism – both critically questioned the willingness of actors to conform to EU rules and are characterized by a more theoretical elaboration and specification of the role of actors' preferences, values and interactions between actors,

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<sup>1</sup> Twelve interviews were held with actors having a 'helicopter overview' of the process, six interviews with provinces, four interviews with safety regions, 12 interviews with regional water authorities, and one interview with a municipality.

Table 1. Policy implementation schools and selected influential factors.

Factors influencing policy implementation			
School	Factors		References
Traditional (domestic) implementation literature	<ul style="list-style-type: none"> <li>• Goodness of fit/misfit</li> <li>• Political culture</li> <li>• Fragmentation of institutional structure</li> <li>• Coordination</li> <li>• Cooperation</li> </ul>	<ul style="list-style-type: none"> <li>• Cooperation</li> <li>• Flexibility of Member State</li> <li>• Political and societal support</li> <li>• Political power of the EU</li> <li>• Content of EU Directive</li> </ul>	Beunen <i>et al.</i> (2009); Börzel (2003); Bursens (2002); Hartlapp (2009); Jordan (1995, 1999); Knill & Lenschow (1998); Krislov <i>et al.</i> (1986); Lampinen & Uusikylä (1998); Mastenbroek (2005); Sabatier (1986); Schelfaut <i>et al.</i> (2011); Zwaan (2012)
Rational choice institutionalism	<ul style="list-style-type: none"> <li>• Actors' self-interest and goals</li> <li>• Political power of Member State</li> </ul>	<ul style="list-style-type: none"> <li>• Interactions between domestic actors</li> </ul>	Dimitrova & Rhinard (2005); Falkner <i>et al.</i> (2005); Hartlapp (2009)
Social normative institutionalism	<ul style="list-style-type: none"> <li>• Logic of appropriateness</li> <li>• Interactions between domestic actors</li> </ul>	<ul style="list-style-type: none"> <li>• Willingness of actors to conform</li> <li>• Existing view on the EU</li> </ul>	Dimitrova & Rhinard (2005); March & Olson (1989, 2004); Mastenbroek (2005)
Institutional processual approach	Contextual factors: <ul style="list-style-type: none"> <li>• Goodness of fit</li> <li>• Activities of actors</li> </ul> Social mechanisms: <ul style="list-style-type: none"> <li>• Willingness of actors to conform</li> </ul>	<ul style="list-style-type: none"> <li>• Attribution of opportunity or threat</li> <li>• Logic of appropriateness</li> <li>• Attribution of success/failure</li> </ul>	Kingdon (1995); Levitt & March (1988); McAdam <i>et al.</i> (2001); Zahariadis (2007); Zwaan (2012)
Additional factors	<ul style="list-style-type: none"> <li>• Uncertainties</li> <li>• Science</li> <li>• Participation level</li> </ul>	<ul style="list-style-type: none"> <li>• Available resources</li> <li>• Economic variables</li> </ul>	Beunen <i>et al.</i> (2009); Börzel (2003); Hartlapp (2009); Newig <i>et al.</i> (2005); Mastenbroek (2005); Pieterse <i>et al.</i> (2009); Quevauviller <i>et al.</i> (2005); Sabatier (1986)

often influenced by the wider institutional setting (Mastenbroek, 2005; Treib, 2006; Zwaan, 2012). Rational choice institutionalism assumes that actors will act as self-interested stakeholders, making calculated decisions on how to react to formal EU rules, guided by the logic of consequentiality (March & Olson, 1989; Zwaan, 2012). And social normative institutionalism assumes that actors' decisions to conform will depend on their ideas as to what is morally right (Dimitrova & Rhinard, 2005; Zwaan, 2012). Factors from those two schools overlap, since norms and rationality are intimately connected (Finne-*more* & Sikkink, 1998).

The last school, the institutional processual approach, also explains how actors respond to EU formal rules. According to this school, social mechanisms (factors affecting the willingness of actors to conform to a rule) and contextual factors (related to institutions and their setting) determine the response of a Member State to a rule (Zwaan, 2012).

Most selected factors could be connected to these schools, but some could not, and the latter are summarized in Table 1 as additional factors. As becomes clear from Table 1, there is overlap between factors mentioned by different schools.

## Main characteristics of the EU Floods Directive

In 2003, the Netherlands and France jointly placed the importance of floods on the political agenda in Europe (Dworak & Görlach, 2005). The Netherlands had three main incentives for being a prime mover, in particular: implementing the solidarity principle in formal legislation, standardizing the river basin management approach, and establishing funding for flood prevention. The first two were met by the FD; only the last was not (Dekker, 2008; Van de Glind, 2009). The FD entered into force in 2007 and was translated into national law by each Member State before 2009 (Klijn et al., 2008; Slager et al., 2014). This is the first Directive that explicitly focused on floods and is of significant relevance for the downstream-located Netherlands, since this area is vulnerable to floods, and flood risks could be passed from upstream to downstream areas across borders. Safety and flood risk management are dominant Dutch governance issues and the FD provides a framework for assessing and managing flood risks to ‘reduce the adverse consequences for human health, the environment, cultural heritage, and economic activity associated with floods in the Community’ (Directive 2007/60/EC, article 1, 2007). Floods are defined in the FD as a ‘temporary covering by water of land normally not covered by water’ (Directive 2007/60/EC, article 2, 2007), which could result in flooding; this term is defined by Douben as ‘the overflowing or failing of the normal confines of e.g. a river, stream et cetera’ (Douben, 2006). Douben (2006) states that both definitions are often mixed up and, according to his findings, the Floods Directive should be called the *Flooding* Directive. Even though it is important to consider the nuanced difference between the terms ‘Floods’ and ‘Flooding’, this paper applies the term used by the European Commission: the EU Floods Directive. The FD focuses on the reduction of damage, consistent with the prevailing European opinion that floods cannot be prevented and should therefore be managed (D’Haeseleer et al., 2006). The FD consists of procedural agreements, leaving flexibility to Member States for practical implementation implications, offering the opportunity to jointly address problems in river basins (Dworak & Görlach, 2005; Leskens et al., 2009; Van de Glind, 2009; Rijksoverheid, 2010).

The FD introduced a three-stage approach (Figure 3). First, Member States should have carried out a preliminary flood risk assessment by December 2011, to identify areas having a potentially significant flood risk. Second, for those identified areas, flood risk and hazard maps should be developed by December 2013, showing possible consequences of floods for various flooding scenarios. The maps are intended to be an effective tool for information dissemination, raising public awareness, priority-setting and

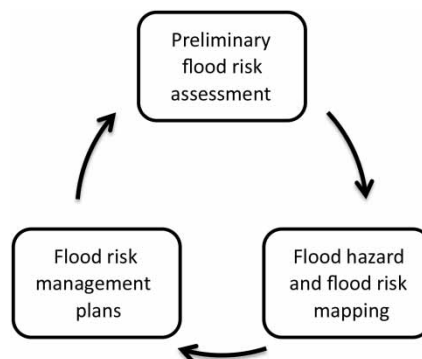


Fig. 3. Implementation cycle of the Floods Directive.



policy-making with regard to flood management. Third, flood risk management plans should be established before December 2015 for each area identified as having a potentially significant flood risk, incorporating all aspects of flood risk management. This three-stage approach should be updated every six years, similar to the cycle of the WFD (Directive 2007/60/EC; Hagemeier-Klose & Wagner, 2009; Hörmandinger, 2010; Rijksoverheid, 2010).

Besides these mandatory requirements, the FD stipulates several principles to be followed during the implementation. Those principles are as follows:

- (1) A river basin management approach – river basins are the main governance units.
- (2) Safety chain – the FD should be implemented based on the concepts of prevention, protection and preparedness.
- (3) Risk approximation – objectives and measures will be based on a risk and consequences assessment.
- (4) Sustainability – sustainability should be considered.
- (5) Subsidiarity – considerable flexibility should be left to the local and regional levels.
- (6) Solidarity.

The solidarity principle, in particular, is important for the downstream-located Netherlands, as it states that Member States should not take any measure that increases flood risks in other Member States, unless those are coordinated and agreed upon by the affected parties. So, this principle provides an instrument for accomplishing formal transboundary flood management agreements (Ministerie van Verkeer en Waterstaat (V & W), 2008; Leskens *et al.*, 2009; Rijksoverheid, 2010). Additionally, the FD contains process requirements, such as international coordination, synchronization and coordination with other EU Directives, and public participation (Hagemeier-Klose & Wagner, 2009; Hörmandinger, 2010). This research focuses on the three main requirements, rather than the process requirements and principles.

## Research assumptions

The literature review resulted in a comprehensive overview of factors that could influence an EU Directive's implementation processes; these are shown in Table 2. Based on the main characteristics of the FD, we have formulated assumptions for each factor concerning their expected influence on the FD's implementation process in the Netherlands (Table 2). In Table 2, factors are clustered into the four dimensions of the Policy Arrangement Approach<sup>2</sup>, which is applied as an insightful and comprehensive way of structuring an institutional (environmental) or policy field. Factors are grouped into actor, resources and power, rules, discourse and contextual categories.

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<sup>2</sup> The Policy Arrangement Approach is a theoretical and analytical framework, combining insights on both discursive shifts and institutional change, that studies changes and stability in governance processes and the driving forces behind them. The central element is the policy arrangement, defined as the way in which a certain policy domain is shaped in terms of organization and substance. A policy arrangement is conceived as consisting of four interwoven, analytical dimensions that can change over time and should be studied to understand governance processes (Arts *et al.*, 2006; Liefferink, 2006; Wiering & Arts, 2006).

Table 2. Selected factors and their expected influence on the implementation process (a minus sign means an expected hindering effect, while a plus sign indicates a probable stimulating effect).

Assumptions and operationalization of selected influential policy implementation factors			
Dimension	Factor	Operationalization	Research assumption
Actors	Fragmentation of institutional structure (–)	Dispersion of implementation responsibilities between the governance systems in a Member State	The complex division of responsibilities concerning the implementation of the FD in the Netherlands could hinder the implementation process
	Coordination (+)	Organization, coordination and alignment between public actors for the FD's implementation	The high level of coordination between public actors (on EU and national level) will stimulate the implementation of the FD
	Cooperation (+)	Collaboration between parties to implement the FD correctly and in-time	Various cooperation possibilities on national and international level will stimulate the implementation of the FD
	Willingness of actors (+)	Implies whether an actor is eager to act upon the requirements of the FD	Based on the proactive role of the Dutch government, it can be expected that the willingness to conform to the FD is present and will stimulate the implementation process
	Actors' self-interest and goals (+)	A Member State will compare the consequences of the FD with its own political and material interests	The FD fits mainly with the interests and goals of the Dutch government, which will stimulate the implementation process of the FD
	Public participation (+)	The involvement of stakeholders during the implementation process	The process requirement of participation will increase the level of participation, which will stimulate the implementation process
	Flexibility of Member State (–)	The possibilities of a Member State to react upon and adapt to changes in the policy field	The embeddedness of flood risk management in Dutch policies and institutions will decrease the flexibility and possibly hinder the implementation process
	Activities of other Member States (+/–)	The response of other Member States towards the FD concerning, for example, execution, interpretation and implementation	If other Member States are very ambitious, then this will influence the implementation in the Netherlands positively
Resources and power	Political power of EU (–)	The enforcement and sanctioning power of the EU	The relatively low political power of the EU could hinder the implementation process of the FD
	Political power of Member State (+)	Participation and influence that a Member State has during the policy-making process of the FD	The Netherlands participated highly during the policy-making, so its political power was high, which will stimulate the implementation process
	Available resources (–)	Available resources are defined in this study as financial means, administrative means and manpower	The higher the availability of resources, the easier the implementation process will be

(Continued.)



Table 2. (Continued.)

Assumptions and operationalization of selected influential policy implementation factors			
Dimension	Factor	Operationalization	Research assumption
Rules	Goodness of fit/misfit (+)	The extent to which the FD fits existing national practices and rules in the Netherlands and the degree of influence (stimulating/hindering) of this fit or misfit on the level of implementation	Due to the existing, advantaged flood risk management policies in the Netherlands and the procedural focus of the Directive, the fit with the FD will be quite high, which stimulates the policy implementation
	Interaction with other (national) policies (–)	The way in which existing national and international policies influence the implementation of the FD	The implementation process is more complex, due to the high level of existing water policies that will interact with the FD
	Attribution of success (+) or failure (–)	The way an actor experienced the implementation of earlier Directives (as a success or failure) will influence the implementation level of the FD	If an organization experienced the implementation of other Directives as a success, then this will influence the implementation process positively and vice versa
Discourses	Political culture (+)	Political values, norms and ideas that are present in a country and that influence the implementation of policies	Dutch political culture is, according to history, in favour of water policies, which will probably stimulate the implementation of the FD
	Political support (+)	The acceptance of the FD by Dutch politicians	High awareness amongst politicians of flood risks will stimulate the implementation of the FD, while a low awareness will hinder the process
	Societal support (+)	The acceptance of the FD by Dutch society	High awareness in Dutch society of flood risks will stimulate the implementation of the FD, while a low awareness will hinder the process
	Logic of appropriateness (+)	The actor determines whether following the requirements of the FD is the right thing to do, based on their situation and identity	The Netherlands values the requirements of the FD as the right thing to do, which will stimulate the implementation process
	Attribution of opportunity (+)/threat (–)	The process by which an actor interprets the FD as an opportunity or as a threat	If Dutch organizations perceive the FD as an opportunity, then this will stimulate its implementation and vice versa
Contextual factors	Content Directive (–)	The clarity, consistency, understandability, quality and complexity of the FD	Interpretation difficulties and complexity of the FD will hinder its implementation
	Image of EU (+/–)	The existing image of the EU in a Member State	When the image of the EU is positive in the Netherlands, then the implementation process will be smoother

(Continued.)

Table 2. (Continued.)

Assumptions and operationalization of selected influential policy implementation factors			
Dimension	Factor	Operationalization	Research assumption
	Uncertainty (–)	Implies the doubts an actor could have related to all aspects of the FD	The more an actor experiences uncertainties related to the FD, the more this will hinder the implementation process
	Science (+)	Scientific research that contributes to knowledge necessary for a smooth implementation of the FD	Scientific research will stimulate the implementation of the FD

Research results: percentage of actors experiencing the influence of factors on the FD's implementation process in the Netherlands.

### Progress in the implementation of the Floods Directive in the Netherlands

The Netherlands regards the FD as an instrument to reduce and manage future flood risks and as an important juridical instrument for international cooperation and alignment (Rijksoverheid, 2010; Slager et al., 2014). The Dutch government made use of three principles during the implementation, namely, a correct and in-time implementation, the creation of added value for Dutch water policies, and appropriate management of flood risks (Ministerie V & W, 2008, 2010).

The FD was implemented in the Dutch Water Act in 2009 (Ministerie V & W, 2010). Ultimately, the Minister of I & M is responsible for a correct and in-time implementation, although other water managers have implementation responsibilities as well, since the Netherlands is a functionally decentralized entity (Rijksoverheid, 2010). This means that the national government (e.g. Ministry of I & M, its Public Works Department, and the Ministry of Security and Safety), provinces and their umbrella organization (Inter Provinciaal Overleg: IPO), municipalities (and the associations for (riparian) municipalities), regional water authorities and their overarching organization (Unie van Waterschappen: UvW) as well as safety regions are jointly concerned with the FD's implementation. In practice, municipalities have no formal responsibilities regarding flood management and thus played very little part in the implementation. Safety regions contributed solely to the control of disasters. In the Dutch application of the multi-layered safety approach, both disaster control (third layer of safety) and sustainable spatial planning (second layer of safety) have less priority than safety, flood protection and prevention (first layer of safety). Thus, interviews with safety regions and municipalities were used for gaining a comprehensive overview of the implementation process, but are not considered for the identification of influential factors. A FD's project group (IMPRO) was established to ensure a correct and in-time implementation, to guarantee international coordination, and to stimulate process and administrative alignment between actors. Responsibility for the production of maps and plans was divided among four national groups: production team maps, plans, process, and alignment (Ministerie V & W, 2008; STOWA, 2011; Helpdesk Water, 2012; Alberts, 2013).

Looking at both case-study areas and the overall national situation, it became clear that case dynamics are very similar; thus the implementation state of the FD is quite similar for the whole country. Since the whole country was identified in earlier assessments as an area having a potentially significant risk of

flooding, the Netherlands was not obliged to fulfil the FD's first requirement based on Article 13, section 1b of the FD (Rijksoverheid, 2010; Slager *et al.*, 2014). The societal significance of potential flood risks is paramount in the Dutch implementation of the FD (Ministerie V & W, 2010; Atsma, 2011). Therefore, the FD needs to be applied to all areas that are protected by primary dikes, areas that are protected via standardized regional dikes, and unprotected areas in the neighbourhood of primary dikes. Moreover, unprotected areas should also be incorporated as risk areas, when Belgium or Germany considers those small regional rivers as areas having a potential flood risk (Ministerie V & W, 2010; Atsma, 2011; Van den Berg, 2013). The Netherlands has chosen a pragmatic implementation of the FD (Ministerie V & W, 2008). This strategy was chosen because a number of accurate flood risk management data, policies, plans and programmes were already in existence and several, mainly regional, actors were opposed to extra work. On the other hand, the Dutch are also ambitious, for example, by considering more themes in their flood maps than just the obligatory themes, such as vulnerable infrastructure.

For the second requirement, that is, the production of the flood risk and hazard maps, regional parties are responsible for the delivery of data, which is coordinated and aggregated by the provinces and the IPO. The IPO administers the national database containing all flood risk data. This database is seen as one of the FD's advantages, because it provides the nation with better, easily accessible and more transparent overviews of flood risk data. Some difficulties and differences in the maps' production were reported, caused by, *inter alia*, varying interests of parties and data availability. For example, the provinces of Overijssel, Zeeland, Zuid-Holland and Gelderland were a little late in providing all relevant data (Productieteam Kaarten, 2013). Another example is that the regional water authority Roer en Overmaas included all regional rivers in its maps, while the adjacent regional water authority Peel en Maasvallei mapped only one regional river. Provinces and the national government are responsible for the maps' production. Deltares, an independent research institute, supports the maps' production process and secures the quality of both data and maps. The maps' consultation rounds took place during mid-May 2013. Despite some delays, the publication of the maps in December 2013 was in accordance with the FD's requirement.

The implementation of the third requirement is for the whole country at one and the same time, since all regional parties provided input for the plans, which is aggregated and complemented by the national government (Rijksoverheid, 2010; Segers & Bauwens, 2013). Again, provinces coordinated the regional input into building blocks for the national government (Segers, 2011; Goudriaan, 2013). One of the most important aspects of the plans is the measures table, expressing all planned activities concerning flood risk management in the Netherlands for the coming years (Silver, 2013a). Consultation rounds and administrative discussions were held at the start of 2013 (Kors, 2012; Meertens & Silver, 2012). At the end of 2014, draft plans were to be open for public consultation and it is expected that they will be finalized on time (*i.e.* by December 2015) (Silver, 2013b). All described steps are shown in Figure 4. National flood risk management is complemented by an international river basin management plan, which is the responsibility of river basin commissions (Schmid-Breton, 2013).

It can be concluded that the FD's implementation in the Netherlands is on schedule, that obligations will be fulfilled on time, and that what has been done was only what was required at EU level. Also, most actors appreciated the FD's advantages, such as the formalization of the solidarity principle, stimulation of transboundary cooperation and alignment, increasing transparency, communication of flood risks and the creation of an overview of existing plans, gaps and possibilities for the future. Nonetheless, these are mainly advantages for the Netherlands as a country and most regional actors do not experience

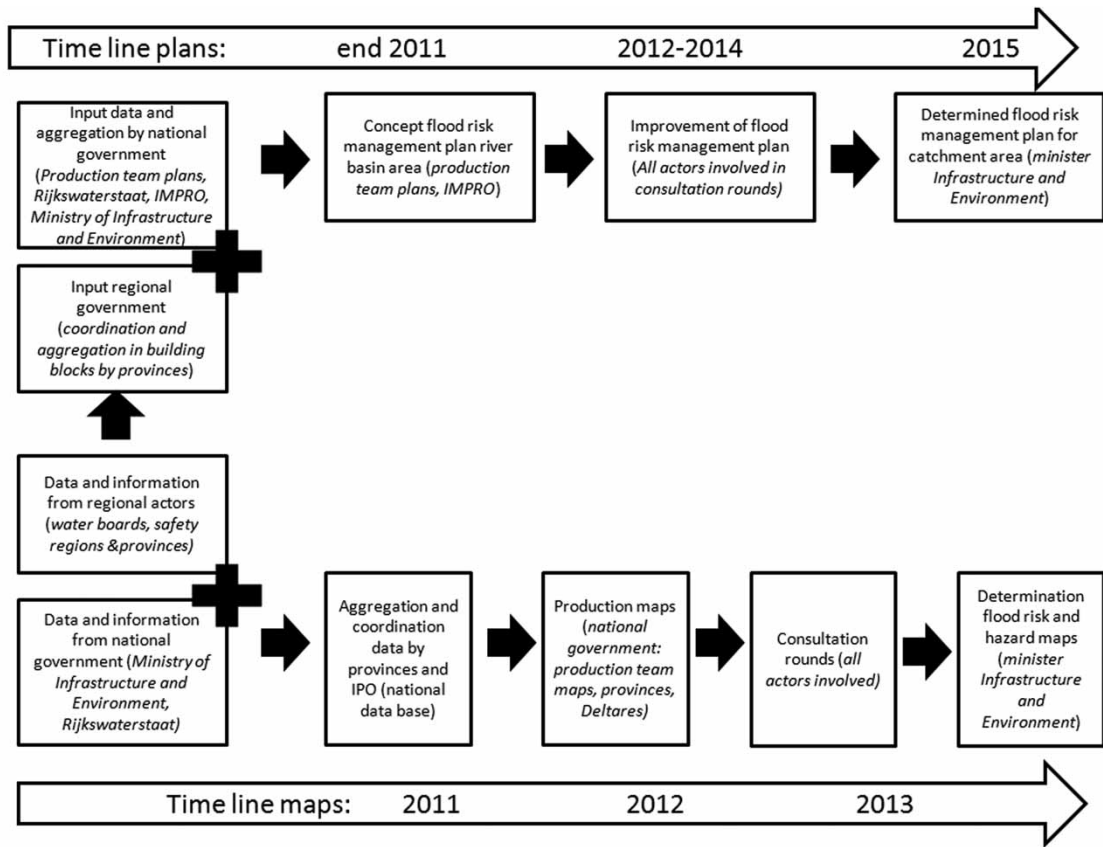


Fig. 4. Steps for requirements two and three of the Floods Directive.

direct advantages for their organization individually. Looking at the process, most actors recognize that the process was sub-optimal, iterative and confusing, for instance, concerning the division of implementation responsibilities, defining the FD's implementation scope, aggregation of data and information, and the participation of safety regions. The following section explores factors that influenced the FD's implementation process in the Netherlands from the perspective of interviewees and respondents.

#### *Factors hindering and stimulating the implementation process of the Floods Directive*

The empirical research revealed multiple factors that hindered or stimulated the FD's implementation process in the Netherlands and could have influenced the choice for the moderate but appropriate implementation level. Table 3 presents the research outcomes: the percentages of respondents that considered a factor as hampering, neutral or stimulating the FD's implementation for both cases, for actors having a helicopter overview and for the survey respondents. Table 4 merges all results, presenting whether or not factors were experienced as influential, and shows whether the researchers' assumptions are rejected or not. In conclusion, multiple factors found in policy implementation literature were identified in practice, as well as the fact that the implementation of an EU Directive is not a rational follow-up

Table 3. Experienced influence of factors by regional actors in the Rhine-West and Meuse river basins, by national actors and by survey respondents.

Total number of respondents 1= regional actors of Rhine-West (100%) = 12 organizations. 2= Meuse: 7 organizations (100%). 3= National actors (having a helicopter view on the process): 7 organizations (100%) and 4= survey respondents 47= 100% (Researchers made use of rounded percentages. x means not applicable for the survey research. The sum of all number 1's for each factor – hindering plus neutral plus both plus stimulating – is equal to 100%, the same goes for the other numbers.

Dimension	Factor	Experienced as hindering				Neutral/No influence				Experienced as both hindering and stimulating				Experienced as stimulating			
		1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
Actors	Coordination	25	14	14	47	8	0	43	32	33	43	0	0	33	43	43	21
	Cooperation	0	0	14	9	8	0	0	11	0	0	14	54	91	100	57	26
	Willingness of actors	25	57	57	38	33	0	29	57	17	14	14	0	25	14	0	4
	Actors' self-interest and goals	33	14	0	4	25	14	71	57	0	0	0	0	41	71	29	38
	Public participation	0	0	14	x	100	43	43	x	0	57	14	x	0	0	29	x
	Flexibility of Member State	0	0	0	x	100	100	100	x	0	0	0	x	0	0	0	x
	Activities of other Member States	0	0	0	0	41	14	0	75	50	43	29	25	8	43	14	0
	Fragmentation of institutional structure	17	29	29	8 ½	33	0	43	34	41	29	14	34	17	43	14	23 ½
Resources and power	Political power of EU	25	0	0	4	25	29	43	68	8	14	14	0	41	57	43	28
	Political power of Member State	0	14	0	10 ½	17	43	29	79	41	14	14	0	41	29	57	10 ½
Rules	Available resources	41	71	71	21	33	14	14	32	25	14	0	0	0	0	14	47
	Goodness of fit/misfit	33	43	14	15	0	0	14	30	17	0	0	40	50	57	71	15
	Interaction with other (national) policies	50	29	29	x	50	57	43	x	0	14	14	x	0	0	14	x
	Attribution of success/failure	41	85	29	30	33	0	19	47	8	0	29	0	17	14	14	23
Discourses	Political culture	0	14	0		100	71	85		0	0	14		0	14	0	
	Political support	33	43	57	32	25	14	29	64	17	14	14	0	25	29	0	4
	Societal support	0	14	29	13	100	43	57	79	0	29	14	0	0	14	0	8
	Logic of appropriateness	0	0	0	x	100	85	85	x	0	0	0	x	0	14	14	x
	Attribution opportunity/threat	41	0	14	9	50	43	85	51	0	0	0	0	8	57	0	40
Contextual factors	Content Directive	58	57	43	54	17	0	0	40	17	29	43	0	8	14	14	6
	Image of EU	33	43	57	x	50	57	43	x	17	0	0	x	0	0	0	x
	Uncertainty	0	14	0	x	100	0	71	x	0	0	29	x	0	0	0	x
	Science	0	14	0	x	100	0	85	x	0	0	0	x	0	0	14	x

Table 4. Summarizing the research outcomes.

Dimension	Factor	Type of effect	Research assumptions
Actors	Coordination	Hindering and stimulating	Partly confirmed
	Cooperation	Stimulating	Confirmed
	Willingness of actors	Hindering	Not confirmed
	Actors' self-interest and goals	Stimulating	Confirmed
	Public participation	No influence	Not confirmed
	Flexibility of Member State	No influence	Not confirmed
	Activities of other Member States	Hindering and stimulating	Partly confirmed
Resources and power	Fragmentation of institutional structure	Hindering and stimulating	Partly confirmed
	Political power of EU	Stimulating	Not confirmed
	Political power of Member State	Stimulating	Confirmed
	Available resources	Hindering and stimulating	Confirmed
Rules	Goodness of fit/misfit	Hindering and stimulating	Partly confirmed
	Interaction with other (national) policies	Hindering	Confirmed
	Attribution of success/failure	Hindering	Confirmed
Discourses	Political culture	Limited	Not confirmed
	Political support	Hindering and stimulating	Partly confirmed
	Societal support	Limited	Not confirmed
	Logic of appropriateness	Limited	Not confirmed
	Attribution opportunity/threat	Hindering and stimulating	Partly confirmed
Contextual factors	Content Directive	Hindering	Confirmed
	Image of EU	Hindering	Confirmed
	Uncertainty	Limited	Not confirmed
	Science	Limited	Not confirmed

of policy-making and that it is influenced by a combination of factors. In the following sub-sections, factors and their influence on the FD's implementation process, as experienced by the actors involved, are discussed.

*Stimulating factors.* According to interviewees and respondents, the FD's implementation in the Netherlands was relatively simple for several reasons. First, the *goals and interests* of Dutch actors are very similar to the FD's objectives (e.g. the solidarity principle and not passing floods to downstream regions), which was experienced as stimulating for the implementation process. An interesting outcome is that actors with a higher interest in cross-border flood management cooperation (e.g. Meuse case-study and national actors) were also more positive about the FD, as they deal with direct transboundary issues. Second, the significant amount of existing Dutch flood policies, rules, structures and their fit with the FD definitely eased the implementation, as only minor adaptations or extra research were necessary. Thus, most actors experienced the *goodness of fit* factor as stimulating, meaning that the degree of fit with domestic policies and structures positively affected the implementation. However, this is also related to the predominant vision that Dutch flood risk management was already appropriate, leading to less adaptation pressure. This goodness of fit could be explained by the fact that the Netherlands was one of the initiators of the FD and thus affected its content. Hitherto, this factor (i.e. *political power of the Netherlands*) was experienced as having a limited but stimulating influence. While the FD's policy process continued, the Dutch still tried to steer the implementation, for example, via participation in the EU working group F. Another explanation is the long tradition of cooperation regarding water management in the



Netherlands. Therefore, another factor experienced as positive was *cooperation*, being further stimulated by the FD, particularly at the national and international level. Only safety regions and municipalities were scarcely taking any part, because of time and capacity constraints. Furthermore, the Netherlands has a long tradition of complying correctly with EU legislation, often described as the Dutch willingness to be ‘the best kid in class’. Therefore, it is no surprise that the factor termed the *political power of the EU* (e.g. pressure of the EU on Member States) stimulated the FD’s implementation according to our respondents, since the formal deadlines served as added pressure for a correct and in-time implementation. This pressure was relatively of little influence at regional level, but was experienced in particular by national actors, for example, the Ministry of I & M and its Public Works Department. There were additional factors that were not identified by the four studied policy implementation theories, but which stimulated the implementation process as well, such as the timely start, the contribution of the coordination office (IMPRO) and the establishment of four national production teams.

*Hindering factors.* Most hindering factors identified could explain the Dutch choice of a sober implementation ambition with regard to the FD. An example is the factor termed *willingness of organizations*, experienced as hampering the FD’s implementation. In particular, regional water authorities were opposed to extra work at the start of the process. Also, the notion that Dutch flood management was already sufficient led to a critical and negative attitude by organizations. On the other hand, the low-key implementation profile and the obligations imposed by the EU had positive effects on the willingness of actors to cooperate. A second element hampering the implementation experienced by actors was capacity constraints at the regional level, for example, data collection required more effort and more staff. However, at the national level, this factor (*available resources*) did not affect the process. This lack of availability of resources at regional level could be explained by a relatively low degree of political attention (the factor *political support* was experienced as predominantly hindering) in comparison with the parallel process of the Delta Programme, which is today’s key element in Dutch climate adaptation and flood management policies and thus most attention and resources are reserved for this programme. Consequently, the factor *interaction with other (national) policies* was experienced by some as constraining. The relatively low degree of political support and lack of availability of resources are explanations for the muted enthusiasm and willingness of regional actors. Another explanation for their relative lack of willingness and, to a certain extent, also that of national actors is the recent experiences with the WFD’s implementation process, negatively affecting the FD’s implementation (*attribution of failure*). Negative experiences were caused by ambiguities regarding the WFD’s implementation requirements, the slow and iterative process, the strict and ambitious norms, relatively high implementation costs and the considerable amount of extra work. In particular, regional actors were afraid that the FD would become a similar ‘circus’ and proposed a more moderate implementation process. The content of the FD was experienced as *hampering* the FD’s implementation as well, even though there was a relatively good fit with Dutch flood risk management approaches. For example, the flexibility of the FD, vagueness of definitions and ill-defined requirements were leading to ambiguities, interpretation difficulties and recurring discussions among actors, delaying the implementation. Another example is that the European Commission introduced reporting sheets halfway through the process, leading to more ambiguities. Besides which, there is a growing trend in the Netherlands for seeing the EU in a more negative light since, according to interviewees, the EU is increasingly exacting in its demands and increasingly interfering with national policies, causing extra work and demanding more capacity. This relatively *negative image of the EU* hindered the implementation process. Some factors

experienced by actors in our research as hindering the process were not distinguished during the literature review, for instance, the decision not to perform a preliminary flood risk assessment, leading to uncertainties about the FD's scope. In addition, the aggregation of regional input into clear and comprehensive national plans, related to the difficulty that actors used different systems and models to gather data, was constraining; and cooperation with neighbouring countries was causing delays as well.

*Factors having both a positive and negative effect on the implementation process.* An interesting research outcome is that multiple factors were experienced as having both a hindering and stimulating influence on the FD's implementation process, highlighting the implementation's complexity. The involvement of many responsible parties made the implementation process complex, causing delays, inefficiencies and ambiguities, because of interpretation varieties, difficulties of the aggregation of information, and so on. The high participation level can be explained by the fact that the Netherlands is a functionally decentralized entity and historically multiple actors have been involved in the water management sector on different levels. This high participation level also has positive effects, for instance, data is delivered by the most appropriate level, actors could give feedback to each other, knowledge exchange is facilitated, and participation leads to broader support. Therefore, it could be said that the *institutional structure was fragmented*, which is experienced as both hampering and enabling the implementation of the FD. The involvement of multiple organizations required *coordination*. Coordination by the national government was experienced as limited, albeit it organized several meetings and provided information via websites and other means. This led to ambiguities and uncertainties among regional actors regarding the division of responsibilities, type of data required and, what is more, hindered the implementation process. Regional water authorities, in particular, experienced this constraining impact and safety regions were reluctant to participate. On the other hand, coordination of provinces at the regional level was experienced positively. So, the *coordination* factor had both positive and negative effects, caused by the mix of top-down and bottom-up governance. Moreover, the FD was perceived both as an opportunity and threat by actors involved (*attribution opportunity or threat*).

## Discussion

It should be noted that research outcomes are based on interviewees' and respondents' perceptions of influential factors and that the (lead-)researcher filtered this information. Another difficulty experienced was that factors could be qualified as both positive and negative, and often a neutral answer was given. Research objectivity is ensured, as far as possible, by using transcripts of all interviews, checking statements in policy documents and by the relatively large number of interviewees (for some organizations more than one staff member was interviewed). Even so, conclusions presented are a first exploration of influential factors, instead of being far-reaching conclusions.

This research was narrowed down to the Netherlands, whereas it would be valuable to conduct similar research in other Member States and apply a comparative case-study research, because it is open to discussion as to whether the identified factors are characteristic solely of the Netherlands. Of course, the FD's content is the same for all Member States, and the whole of Europe, to a greater or lesser extent, is dealing with an economic crisis (related to the factor *available resources*). Also, all Member States recently dealt with the WFD's implementation, and the learning experiences from that will logically affect the implementation of the FD (*attribution of success/failure*). Even so, some influential factors will be typical

of the Dutch situation alone, as the Netherlands has a long history of flood management, a large number of ambitious flood policies almost exclusively focusing on safety issues, relatively high risk standards and, as a downstream country, a high interest in solidarity. Thus, factors like the goodness of fit, fragmentation of the institutional structure, interaction with national policies, and actors' self-interest and goals could have a (slightly) different impact in the Netherlands in comparison with other EU Member States.

At this time, some studies on the implementation of the FD in other countries or areas are already available, such as in Flanders (Kellens *et al.*, 2013), in Germany (Heintz *et al.*, 2012), in the Oder basin (Kosierb & Baranski, 2013), in the Elbe river basin (Schulz & Kahrstedt, 2012) and for the Rhine (Worreschk, 2012). Even though they identify similarities, the Dutch situation also seems to have unique stimulating and hindering factors. Kellens *et al.* (2013) describe how Flanders deals with other difficulties than those experienced by the Netherlands, since Flanders' main challenges are the incorporation of an assessment for health, environmental and cultural heritage effects of flooding and the incorporation of other types of floods than only river and sea-borne types. Flanders distinguishes itself from other European States by already incorporating both the FD and WFD in the first generation of flood risk management plans, while the Dutch are expected to do so in the second generation. A similarity between the Dutch and Flemish situation is that neither performed a preliminary flood risk assessment (Kellens *et al.*, 2013). Heintz *et al.* (2012) describe the FD's implementation in Germany, also related to the shift towards a risk governance culture. An interesting outcome is that German actors also have different points of view regarding the willingness to accept far-reaching modifications in flood policies (Heintz *et al.*, 2012). Müller (2013) compares Austria, the Czech Republic, Germany and the Netherlands to draw conclusions about agreement and coordination processes between countries with regard to the FD. His conclusion is that legislation and authority structures are very different and that Member States deal with dissimilar technical situations and varying data conditions (Müller, 2013).

## Concluding remarks

According to interviewees and respondents, the FD was not causing major changes in flood policies and flood risk management in the Netherlands; rather it could be seen as another step in an ongoing process towards better (transboundary) flood risk management related to the gradual shift from a 'safety culture' to a 'risk culture' (Müller, 2013). This paradigm shift from flood protection towards flood risk management is referred to by several scholars, for instance, Hartmann and Juepner (2014) conclude that the FD's flood risk management plans are not revolutionary, but an important step towards the institutionalization of this ongoing paradigm shift. The FD contributed to a clear and transparent visualization of flood risks, and a clarification of flood policies and measures ensued in the Netherlands. Moreover, it stimulated national and international cooperation.

This research provided a first explorative overview of factors hindering and stimulating the FD's implementation (Table 4). It would appear at first sight that the implementation process became a relatively easy process, because of the goodness of fit, overlap with Dutch interests, the theme's urgency and more. However, in practice, the implementation was not smooth, as factors were hampering the process, factors such as the experiences with the WFD's implementation and the trend towards a more pragmatic implementation in the Netherlands. It is also worthy of note that the chosen low-key, but appropriate, implementation ambition level and the decision not to perform a preliminary flood risk assessment at the start of the process had a significant influence on the whole implementation process.

Based on this study, it can be concluded that factors from all four policy implementation schools affected the implementation process to different degrees. There is not one school that could explain individually the progress of the FD's implementation process in the Netherlands, which underlines the complexity of EU policy implementation. This complexity could also explain why most of the researchers' assumptions were not, or only partially, confirmed. Based on the clustering of factors via the dimensions of the Policy Arrangement Approach, an interesting research outcome is that factors in the discourse dimension had a limited influence, while power-related factors were mainly experienced as stimulating, and factors in the rules and contextual dimension were overall experienced as hindering the process. The dimension of the actor-related factor contained both positive and negative influential factors.

Various lessons can be learned by studying the implementation process of the FD in the Netherlands. The following recommendations could be put forward after the exploration of hindering and stimulating factors. On an EU level, more steering and clarification as well as a clearer formulation of the Directive itself would help individual Member States. On the Dutch national level, the Ministry of I & M should coordinate the process more actively and better clarify implementation responsibilities for each actor. The Ministry of I & M should also have chosen a clear strategy at the start; it should have taken more time at this point in the process; and it should have stimulated the willingness and participation of local actors more. This could be done by providing summarized information and by showing the benefits of participation. The Ministry could also make the differences between the WFD and FD clearer and achieve more careful alignment with the Delta Programme and other water policies. Moreover, the outcomes could be used for more purposes than for only reporting to the EU.

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