Allocating responsibility for environmental risks

A comparative analysis of examples from water governance

Doorn, Neelke

DOI
10.1002/ieam.1799

Publication date
2017

Document Version
Accepted author manuscript

Published in
Integrated Environmental Assessment and Management

Title: Allocating responsibility for environmental risks: A comparative analysis of examples from water governance

Volume 13(2), 2017, pp 371–375, DOI: 10.1002/ieam.1799

Neelke Doorn†*

Technical University Delft, Faculty of Technology, Policy and Management

Department of Values, Technology and Innovation

N.Doorn@tudelft.nl

PO Box 5015

2600 GA Delft

The Netherlands

Telephone: +31 15 27 88059

* Address correspondence to N.Doorn@tudelft.nl.

Abstract

EDITORS' NOTE: Roskilde University in Denmark hosted the international workshop "Environmental Risk – Assessing and Managing Multiple Risks in a Changing World," November 16-17, 2015, as part of its annual 'SUNRISE' series of conferences and workshops that feature groundbreaking science. The goal of this workshop was to develop a holistic perspective for assessing and managing risks from the multiple stressors and natural hazards that impact ecosystems and the humans who rely on them. Such a perspective is critical as—in a finite world with limited resources—it is paramount that major, multiple risks be appropriately addressed. This paper is 1 of 4 from the workshop, 3 of which are published in this issue of Integrated Environmental Assessment and Management, and 1 of which is published as a Focus Article in Environmental Toxicology and Chemistry. All 4 papers will be available as a Virtual Issue (details to come).

The focus of this paper is on the allocation of responsibilities for addressing environmental risks in transboundary water governance. Effective environmental management in transboundary situations requires coordinated and cooperative action between diverse individuals and organizations. There is currently little insight on how to foster collective action such that individuals and organizations take the responsibility to address transboundary environmental risks. On the basis of four cases of transboundary water governance, it will be shown how certain allocation principles are more likely to encourage cooperative action. The main lesson from these case studies is that the allocation of responsibilities should be seen as a risk distribution problem, including considerations of effectiveness, efficiency, and fairness.

Keywords:

Transboundary, water governance, collective action, environmental risks, environmental fairness

INTRODUCTION

The topic of responsibility in environmental risk management has received increasing attention in the past years. Not only does it matter *what* measures should be taken, equally important is the question *who* should take any measures. The focus of this paper is on the allocation of responsibilities for addressing environmental risks in transboundary water governance. Inadequate management of water may lead to famines, food insecurity, ecological destruction, and conflicts over scarce resources like freshwater and arable land (Gleick 2011). With over 260 river basins shared by two or more countries and 39 countries receiving most of their water from outside their borders (UNDP 2006), transboundary water basins may provide a source of (regional) instability or even conflict, especially when downstream users cannot meet their water needs due to upstream pollution or the presence of large dams (Zeitoun 2009).

It is increasingly recognized that effective environmental management in transboundary situations requires coordinated and cooperative action between diverse individuals and organizations, ranging from those responsible for implementing regulations to those responsible for reducing their water consumption or pollution. There is currently little insight on how to foster collective action in transboundary situations such that individuals and organizations take responsibility to address environmental risks.

Unfortunately, the discussion of responsibility is dispersed over three diverse and separate bodies of literature, with little discussion on how responsibilities are actually distributed in real-life situations of transboundary environmental management. In the environmental philosophy literature, the focus is often on the extent to which individuals can be held responsible for environmental risks, most often in relation to climate change (Peeters et al. 2015; Van de Poel et al. 2012). In the environmental management literature, attempts have been made to develop approaches that allocate responsibility for pollution among

producers and consumers (Berzosa et al. 2013; Lenzen et al. 2007). A third body of literature is the economics literature on collective action and – most often – the lack thereof as a result of free rider behavior (see next section). Although the economics literature pays ample attention to transboundary cooperation, this is often done by way of formal games rather than a qualitative analysis of real-life situations. Hence, although these bodies of literature all provide interesting ideas about responsibility, none of them provide a complete empirically-informed picture for transboundary situations in which countries or governmental agencies have to initiate action.

In this paper I assess the extent to which the insights developed in the different bodies of literature are compatible with and provide insight to real-life transboundary cooperation. I do so on the basis of four brief case studies in transboundary water management. I introduce the management of environmental risk, such as risks related to climate change, pollution, resource exploitation, as a collective action problem, that is, a situation in which the efforts of two or more individuals or individual organizations are needed in order to achieve a desired outcome, but in which it is in the individual or organization's rational self-interest not to take any action. Then twelve principles are presented for allocating responsibilities in environmental management and using four case studies to show how these principles can be used to analyze the success or lack thereof. This paper's focus is on the application of the twelve principles, while a more systematic discussion of the principles is beyond the scope of the paper. Finally, I argue that allocation of responsibilities should be seen as a risk distribution problem, which should fulfill the criteria of effectiveness, efficiency, and fairness. In situations in which the existing organizations do not allow for an efficient, effective and fair allocation of responsibilities, states have a "meta-responsibility" to set up a more appropriate constitution of organizations that does allow for a proper allocation of responsibilities in transboundary risk governance.

COLLECTIVE ACTION AND THE "FREE-RIDER PROBLEM"

Environmental management poses many challenging situations in which collective action is needed, ranging from the prevention of over-use of our natural resources to reduction of pollution. These situations are prone to free rider behavior, where it is in the collective interest that an individual or organization takes action or cooperates but in their self-interest not to take any action. This free rider behavior not only takes place at the level of individuals, but also at the level of organizations including states and countries. The challenge is, therefore, to find means by which individuals and organizations are encouraged to engage in cooperative behavior.

In the context of environmental management, international conventions and agreements are needed by which governments commit themselves to addressing transboundary environmental issues, as was done in the recent Paris climate agreement concluded at the United Nations Conference on Climate Change (COP21). So long as governments do not commit themselves to such agreements, few if any environmental concerns will be effectively addressed (Sandler 2004).

PRINCIPLES FOR ALLOCATING RESPONSIBILITIES

Mostert (2015) identified twelve normative principles for distributing responsibilities in the context of environmental management (Table 1). Some of these principles clearly have an ethical connotation. The principle of solidarity (Principle 9), for example, reflects the idea that it is unfair to allow any one individual or organization to carry all of the burdens and risks. In the philosophy literature, responsibility distributions are deemed fair only if the named individuals or organizations have the capacity to fulfill the assigned responsibilities (Principle 1; Doorn 2012). In the context of environmental management, it is generally

considered fair to allocate responsibility to those individuals or organizations that causally contributed to the problem (Principle 3; Van de Poel et al. 2012).

CASE STUDY: COLLECTIVE ACTION IN FOUR TRANSNATIONAL RIVER BASINS

Disco and Van Heezik (2015) compare four international river basins of which the Netherlands is a part: the Rhine, the Meuse, the Scheldt, and the Ems (Figure 1). They present the general post-1945 history of river basin management as a three-phase transition from the river as use-object to the river as intrinsically valuable. The main concern in river management has shifted from water quality (1945-1975), to the restoration of ecological quality (1975-1995), and finally to efforts to protect against flooding, which centered on improving the retention and storage capacity of rivers. Attempts to restore pre-industrial river morphology went hand-in-hand with increasing concern for the cultural-historical landscape through which the rivers flowed.

The history of international cooperation in the Rhine River basin began in 1950, with the first meeting of the International Commission on the Protection of the Rhine against Pollution (ICPRP). Cooperation flourished between 1987 and 2000, when the Rhine Action Plan (RAP) was put into place. The RAP was the immediate response to a fire at the Swiss pharmaceutical firm Sandoz on November 1, 1986. In an attempt to put out the fire, a mixture of contaminated water and chemicals was released into the Rhine. As a result, water intakes were forced to close and downstream wildlife was killed (Güttinger and Stumm 1992). The resulting huge and unprecedented public outcry prompted political action. Only twelve days after the incident, the relevant Rhine ministers convened in Zurich; they met again in December 1986. They acknowledged that the prevailing Chemicals Convention had proved

ineffective for maintaining the Rhine's water quality, and that battles over national interests had degraded the river's ecosystem. Headed by the Dutch Minister of Public Works, Neelie Kroes, who was advised by the former secretary general of the ICPRP, Pieter Huisman, the Rhine ministers told the ICPRP to draft an "action plan" that would restore the river. Kroes aptly adopted the slogan "bring the salmon back into the Rhine," which appealed to the general public and provided a new diplomatic window of opportunity (Disco and Van Heezik 2015, p 74). On January 22, 1988, the governments of the five Rhine countries signed the RAP. This document formulated its objectives in terms of the positive goals of ecological and morphological restoration rather than chemical threshold levels; it was left to the discretion of the signing countries how to achieve these goals. Thus, the RAP did not consist of prohibitions and prescriptions, but rather of goals to which the signatories had committed themselves, reflecting a spirit of mutual trust (Disco and Van Heezik 2015, p 265). Although the RAP was ambitious, by the early 1990s most of its goals had already been achieved (Disco and Van Heezik 2015 p 78).

In the history of European transboundary water policy, the RAP stands out not only as an uniquely effective effort to improve the chemical and ecological quality of the Rhine River, but also as a remarkably fruitful example of initiating collective action. By contrast, cooperation in three other transboundary rivers proved difficult. Following the success of the RAP, many policy makers recommended that a similar approach be used for the Meuse and Scheldt rivers (Verweij 1999). However, whereas the nations bordering on the Rhine already had a history of setting up international committees to fight pollution, neither the Meuse nor the Scheldt nations had such a history. In the absence of any international commissions, the Dutch pursued a negotiation strategy that used the Scheldt primarily as a means of exchange. Their exclusive sovereignty over the downstream part of the Scheldt, which gave them control over the access route to the Flemish port of Antwerp, made them extremely powerful. In

return for allowing the Belgians to dredge the Scheldt and thereby gain access to Antwerp, the Dutch would be allowed to set standards for the quality and quantity of water that entered the Netherlands via both rivers. However, by negotiating an agreement at the state level, both the Dutch and Belgian negotiators overlooked the Belgian region Wallonia and its strivings for greater independence; since the 1970s, Wallonia had been granted freedom to manage its own economic affairs. The agreement more or less imposed water standards on this region, negatively impacting its economy without providing any accompanying benefits.

Moreover, whereas the riparian states on the Rhine all acknowledged the severity of the pollution problem and the urgent need to take action, such consensus was lacking for the Scheldt and the Meuse. The issue of pollution in the latter two rivers was not high on the agenda of the environmental movement, nor did it attract a lot of media coverage. As a result, politicians stood to gain little electoral traction by supporting this cause.

The river Ems also suffered from lack of action. The Ems is fed almost entirely by German agrarian land, with the exception of a small part lying on the eastern flanks of the Dutch provinces Drenthe and Groningen. The river runs through the German states North Rhine-Westphalia and Lower Saxony before flowing into the Ems-Dollard basin at the German international seaport Emden. The Ems-Dollard estuary connects the Ems with the Wadden Area, a region that is safeguarded by nature protection schemes. Because this estuary is a transboundary body of water between Germany and the Netherlands, all decisions that affect it must be agreed upon by these two nations under the Ems-Dollard Treaty. As with the Scheldt, the Ems also suffered from a conflict between navigational use of the estuary and a concern for ecological quality. In the late 1960s, the Dutch began to build a new port at Ems harbor, with much shorter and deeper access to the sea than the German seaport of Emden; the German central and regional governments, fearing competition, developed a plan to

modernize the Port of Emden. This plan included the construction of a large industrial complex near the Dollard.

This plan caused much uproar both among environmentalists and in the Dutch parliament, as it would inevitably undermine the ecological quality of the estuary. However, as the existing treaty on the Ems-Dollard did not include any environmental provisions, the only way to block or change the plan was to negotiate a more inclusive treaty that would limit the environmental pressure caused by economic use of the estuary. This proved difficult. As it turned out, the main cause for delays and lack of action was not so much the conflicting use of the transboundary estuary itself, but rather Germany's fragmented governance arrangements. While responsibility for navigational affairs was allocated to the central state, responsibility for environmental concerns was allocated to the federate state ("Bundesland") of Lower Saxony. As a result, few restrictions were placed on navigational use, because it was difficult for the lower-level agency of Lower Saxony to impose such restrictions on the higher-level Ministry of Transport (Disco and Van Heezik 2015, p 233). In contrast, the Netherlands was represented by the same national agency, Rijkswaterstaat, in the commissions on both navigational use and environmental concerns. For the German representatives, it was hard to understand that the same institution could represent both these interests. Such institutional incompatibilities led to mutual distrust and a lack of initiative to improve the water quality of the Ems-Dollard estuary.

DISCUSSION

The cooperation, or lack thereof, in the four different river basins, reflects principles identified in Table 1. Principle 1 (capacity) is probably the most fundamental principle for allocating responsibilities, both in the philosophical literature and in the governance literature. Individuals and organizations can only be made responsible for a task if they have all the means and resources available to perform that task. In terms of technical resources, the Rhine

stands in sharp contrast with the other rivers. Whereas the Rhine was already equipped with an excellent monitoring system for water quality, detailed knowledge of the scale of pollution was not available for the other river basins; resources were lacking.

In all four cases, closely related and complementary Principles 5 and 6 (scale and subsidiarity) are highly relevant. The management scale needs to fit, to the extent possible, the scale of the issue to be managed (Young 2003). The subsidiarity principle, originally espoused by de Tocqueville (1835), states that responsibilities should be allocated at the lowest level possible (Kraemer 1998). In the case of the Rhine, the responsible Ministers agreed upon the problem but delegated the responsibility for taking measures to the respective countries. In contrast, in both the Meuse and the Scheldt river basins, quality standards were set by the Dutch and imposed on the Belgians. Thus the Walloon region became responsible for reducing their pollution without having any autonomy in deciding how to do this and without any benefits from doing this. Also in the Ems river basin, there was a mismatch between the management scale and the problem at hand. The lower level governmental agency of Lower Saxony was powerless when it came to imposing measures to reduce environmental impact, because navigation, and economic concerns more generally, were the responsibility of the central government. Principle 7 was also violated, specifically that, for efficiency and effectiveness reasons, responsibilities for closely related tasks should be allocated to one individual or organization.

Principles 11 (stability) and 12 (acquired rights) were also violated. Both principles emphasize the need for gradual rather than radical change. In the case of the Rhine, there was an existing basis for cooperation and the RAP was the adaptation of an existing scheme of responsibilities, not a completely new allocation of responsibilities. In contrast, the inclusion of environmental concerns in the management of the Ems-Dollard estuary was a clear break

with the past. Similarly, the mandated inclusion of environmental standards in the Scheldt was a sharp contrast with the acquired right of the Walloon region to manage their own affairs.

Principle 9, solidarity, a general level of trust, came into play in the Rhine but not the other three river basins. In the case of the Rhine, Dutch minister Kroes sowed the seeds for fruitful cooperation by refusing to blame other countries for systematic pollution; instead, she complementing her Swiss colleague for the effort that Switzerland had already put into pollution prevention (Disco and Van Heezik 2015, p 268). This created an atmosphere of trust, which was clearly lacking in the other river basins where distrust was the rule not the exception.

CONCLUDING REMARKS

The discussion, above, clearly shows that the allocation of responsibility is more than an issue of efficiency, it is also an issue of effectiveness and fairness. The Principles set out in Table 1, together with the four case studies show that responsibility should be seen as a risk distribution problem, with the risk distribution ideally being efficient, effective, and fair (Doorn 2012). If an agreement is considered not to be fair, it is unlikely that it will be effective (Sandler 2004). Trust is also critically important, particularly when cultural differences come into play, but is impossible without fairness.

As shown in the case of the Rhine, collective action problems between nations are not completely intractable. However, they are complex and success stories are less common than should be the case, particularly given the global problem of climate change with associated problems (environmental degradation like habitat loss or invasive species, food insecurity, resource-based conflict, etc). As the case studies illustrate, the twelve Principles need to be explicitly considered in discussions regarding allocation of responsibilities and subsequent

actions. The comparative analysis showed that in some cases the existing organizations were not set up in a way that would have allowed for an efficient, effective and fair allocation of responsibilities. In those suggestions, states have a “meta-responsibility” to set up a more appropriate constitution of organizations that does allow for a proper allocation of responsibilities in transboundary risk governance.

Acknowledgements

This research is supported by the Netherlands Organisation for Scientific Research (NWO) under grant number 016-144-071. I would like to thank Roskilde University and their Environmental Risk Research Initiative for organizing, hosting, and funding the SUNRISE workshop, where this work was presented.

References

Berzosa Á, Barandica JM, Fernández-Sánchez G. 2013. A new proposal for greenhouse gas emissions responsibility allocation: best available technologies approach. *Integr Environ Assess Manage* 10(1): 95-101.

de Tocqueville A. 1835. *De la démocratie en Amérique I*. Paris, France: Librairie de Charles Gosselin.

Disco C, Van Heezik A. 2015. Different strokes for different folks. 50 Years of agreements and disagreements in the Rhine, Meuse, Scheldt and Ems river basin. Delft, Netherlands: Eburon.

Doorn N. 2012. Responsibility ascriptions in technology development and engineering: three perspectives. *Sci Eng Ethics* 18(1): 69-90.

Gleick P. 2011. Water Conflict Chronology. Oakland, CA: Pacific Institute.

Güttinger H, Stumm W. 1992. An analysis of the Rhine pollution caused by the Sandoz chemical accident, 1986. *Interdiscipl Sci Rev* 17(2): 127-136.

Kraemer RA. 1998. Subsidiarity and water policy. In Correia FN, editor, Selected issues in water resources management in Europe. Volume 2. Rotterdam, Netherlands: Balkema, p 387-417.

Lenzen M, Murray J, Sack F, Wiedmann T. 2007. Shared producer and consumer responsibility: theory and practice. *Ecol Econ 61*(1): 27-42.

Mostert E. 2015. Who should do what in environmental management? Twelve principles for allocating responsibility. *Environ Sci Policy 45*: 123-131.

NL MinIeM (Netherlands Ministerie van Infrastructuur en Milieu). 2015. Ontwerp Nationaal Waterplan 2016-2021. The Hague, the Netherlands: NL MinIenM. NL.IMRO.0000.IMsv14NWP2BNZ2-2000 [cited 2016 May 2] Available from https://www.rijksoverheid.nl/documenten/rapporten/2014/12/12/bijlage-1-nationaal-waterplan-2016-2021

Peeters W, De Smet A, Diependaele L, Sterckx S. 2015. Climate change and individual responsibillity. Agency, moral disengagement and the motivational gap. London, UK: Palgrave Macmillan.

Sandler T. 2004. Global collective action. Cambridge, UK: Cambridge University Press.

UNDP (United Nations Development Programme). 2006. Beyond scarcity. Power, poverty and the global water crisis. New York, NY: Palgrave Macmillan.

Van de Poel IR, Nihlén Fahlquist JA, Doorn N, Zwart SJ, Royakkers LMM. 2012. The problem of many hands: climate change as an example. *Sci Eng Ethics 18*(1): 49-67.

Verweij M. 1999. A watershed on the Rhine: changing approaches to international environmental cooperation. *GeoJournal 47*(3): 453-461.

Young OR. 2003. Environmental governance: the role of institutions in causing and confronting environmental problems. *Int Environ Agreem 3*(4): 377-393.

Zeitoun M. 2009. Water: resistance on the route towards a fair share for all. *Nature 459*: 163.

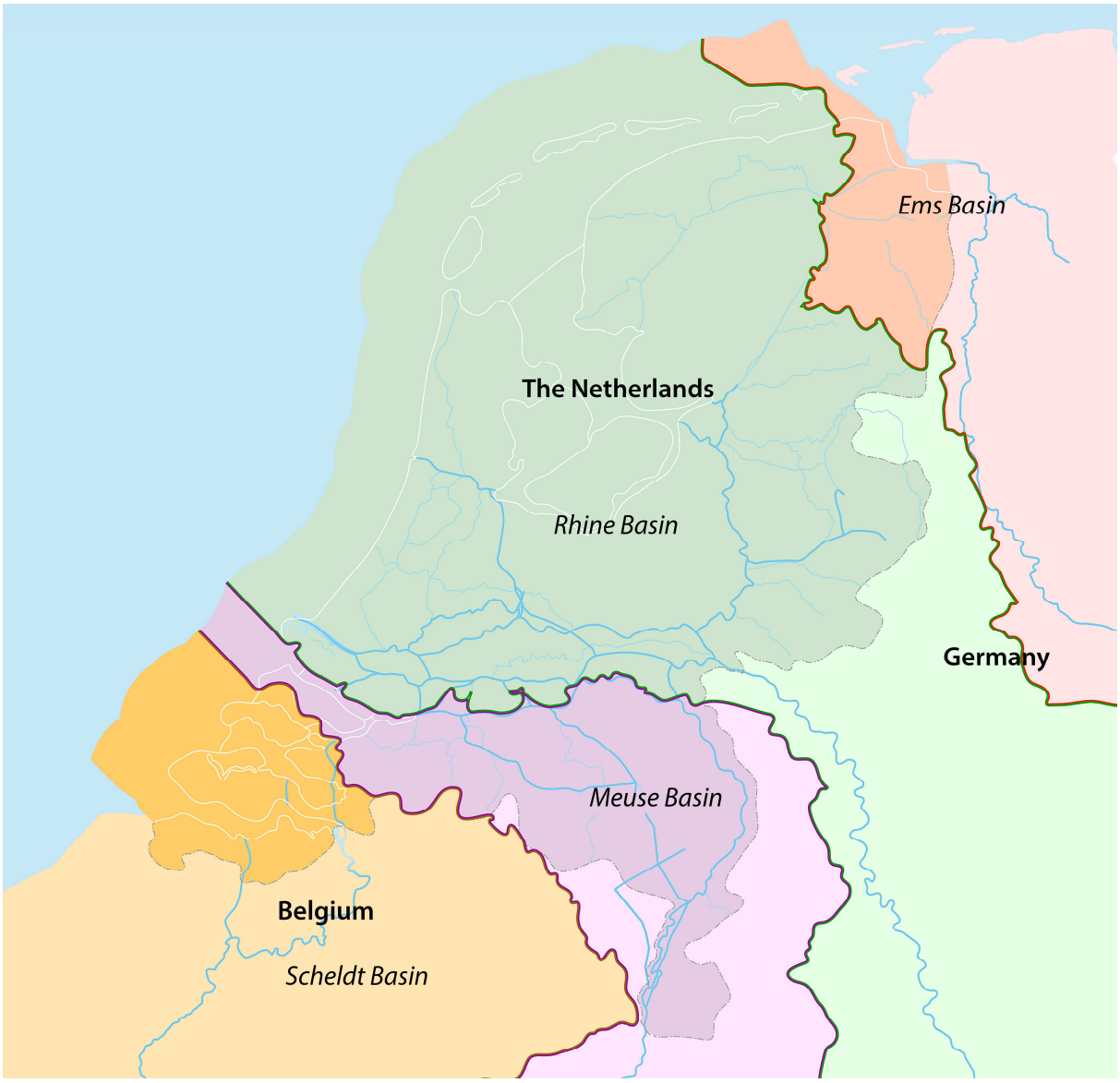

Figure 1. The 4 river basins: Rhine, Meuse, Scheldt, and Ems. (Reproduced with permission from NL MinIeM [2015]).