1   Introduction

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1.1 The international dimension of modern water management

Water is an important natural resource that has affected both the development and the destruction of societies since ancient times (Wittfogel, 1957; Postel, 1999). Modern societies are undergoing change on a number of fronts and thus the associated skills, knowledge and approaches for managing this vital resource are also changing. As such, water management is becoming an increasingly challenging endeavour.

The increasing difficulties associated with water management have arisen due to a variety of factors that can be grouped under four themes. First, a growing number of people are experiencing water quality and quantity problems, and will probably suffer from more severe water scarcity and pollution in the coming decades (WWAP, 2012). The impacts of diffuse uses and pollution are unlike the issues addressed in the past that could be dealt with solely by end-of-the-pipe solutions. The interactions of pollutants and other changes in the quality and quantity of water available are also increasingly complex and difficult to understand. Second, the frequency and severity of extreme events such as droughts and floods continue to increase due to climate change (Solomon *et al.*, 2007). As a result, water users, managers and policymakers have to deal with higher risks that are associated with these events. Third, domestic and industrial sectors are consuming higher levels of water due to the continuing global population growth and the ever-accelerating pace of urbanization (UN, 2011, 2012). However, irrigated agriculture remains the largest user sector in many arid and semi-arid countries, which also rely on irrigation for food security and improved livelihoods (Molden, 2007). Last but not least, the privatization of water sources and services, and the competition for water by various sectors bring up questions related to effective and equitable allocation (Swyngedouw, 2005).

Many countries thus face similar pressures on their water system. The international character and urgency of similar water problems imply a potential as well as a need to learn from each other's experiences. At the same time, the context in which water management problems arise largely

differs between localities. For example, freshwater available per capita is less than 1,000 m³ in Northern Africa and more than 70,000 m³ in Canada (WWAP, 2012). Thus, there is a great potential and need for developing solutions at an international scale and for transferring water policies and knowledge from one locality to another. At the same time, there is also a necessity to look for context-specific solutions.

One of the major factors that complicate the transfer of modern water management knowledge is that water problems are often not primarily technical problems but rather governance problems. Water governance refers to the idea that water is managed through the interactions between many interdependent actors, both public and private. These actors operate at various levels, have different perceptions and objectives and employ various strategies and instruments. Hence, a characteristic of modern water governance systems is that they involve multiple elements, including levels, scales, actors, networks, problem perceptions, objectives, strategies, instruments, responsibilities and resources (Kuks, 2004). Modern water governance systems also acknowledge the growing number and connectedness of water uses and users and the growing uncertainties of the system as a result of, for example, climate change (Van der Brugge and Van Raak, 2007; Pahl-Wostl *et al.*, 2008). They therefore embrace the inherent complexity of water issues as opposed to fighting them (De Boer and Bressers, 2011), incorporate interdisciplinarity (Castro, 2007), include public participation and take the whole water system into account (Burua and Van Ast, 2011). While these ideas about modern water management are valuable, they are unlikely – especially when made operational – to be equally applicable in diverse natural and social settings. Thus, the transfer of knowledge should be done with care and only after a careful consideration of the context-specific conditions and circumstances in which the knowledge was developed (e.g. Mossberger and Wolman, 2003; Ingram, 2011; Swainson and de Loe, 2011).

While many scholars stress that knowledge developed in one context does not – without modification – apply to another context, there is a tendency, in particular among international and supranational institutions and organizations, to look to 'panaceas', i.e. universal remedies that promise to advance the general state of water management. These panaceas take many different forms such as blueprints, best practices, success stories, models and narratives (Meinzen-Dick, 2007; Molden, 2007; Molle, 2008; Mukhtarov, 2008; Ingram, 2011). They are often associated with modern water management concepts, such as integrated water resources management (including the establishment of water authorities at the river basin or watershed level), 'good' water governance and participatory water management. Further, they are strongly promoted – or even imposed – by organizations such as the European Commission, the World Bank and the Global Water Partnership. They are also spread within the scope of development aid or the cross-border work of research

organizations, consultancies and governmental agencies. Despite their ambitious goal of addressing the relevant water management problems, the extent to which the incorporation and implementation of these panaceas have been able to achieve this goal in practice needs to be debated. Two major features of panaceas give rise to this need. First, they treat management alternatives as mutually exclusive, implying that if an alternative is chosen, the others are often completely left out (Meinzen-Dick, 2007). This limited view of managing water leads to failures that sometimes take decades to appear (Mollinga, 2008). Second, the added value of panaceas is overestimated over the other possible options. Panacea approaches assume rigid definitions and boundaries of what is 'good' and what is 'bad'for water management. Narratives are often used as discursive tools to make these definitions and draw boundaries for disseminating panaceas (Molle, 2008).

Thus, despite the widespread efforts to develop and transfer knowledge about modern water management and governance, the analysis and assessment of the real value of these efforts is an important area for further research. This observation has led the editors and contributors of this book to present not only a wide variety of international case studies that involve a transfer of water management knowledge, but also to examine with an objective and critical eye the emergence and application of key concepts in modern water management such as integrated water resources management, river basin management, good water governance, participatory water management and adaptive water management.

1.2 Policy transfer and contextual water management

Although no current evidence was found that policy transfers are on the rise, we believe this to be quite likely in the context of water management since the number of and influence arising from international organizations are increasing alongside a rapid growth in communication means (Dolowitz and Marsh, 2000). While there has been limited attention paid to transfers among water management scholars, this phenomenon has been studied intensively in political sciences and international studies. Policy transfer is a generic concept that can be defined as a process by which policy-relevant knowledge developed in one context is used in another (Evans, 2004; Dolowitz and Marsh, 2000). The term 'policy-relevant knowledge' refers to knowledge associated with the solving of public problems and includes knowledge about policies, institutions and ideas as well as concrete expertise or programmes (Stone, 1999). Context refers to the setting of a transfer, or the conditions and circumstances that influence a transfer process. In the case of water management, this includes the political and institutional contexts, the cultural and economic contexts as well as the biophysical and geographical contexts (Swainson and de Loe, 2011). In this book, we use the term 'policy transfer' to describe not only transfer processes that involve

'action-oriented intentional learning' (Evans, 2009) but also less intentional or unintentional transfer processes that concern, for example, the translation of global discourses into national policies or the emergence of best practices.

The concept of 'policy transfer' is closely related to and partly overlaps with the concepts of 'technology transfer' and 'knowledge transfer'. Policy transfers imply by definition knowledge transfers and *can* take the form of a technology transfer. The reason for using the term 'policy transfer' rather than 'technology transfer' or knowledge transfer' is that the former is commonly used to describe transfers in the public domain whereas the latter terms are more common in organization sciences. Transfers can occur across space (between several political systems) or time (within the same political system) (Dolowitz and Marsh, 2000; Rose, 1993), across sectors or government levels (Evans, 2004) and also – in the case of technology or knowledge transfer – across employees of the same organization or different organizations (Reddy and Zhao, 1990; Trott *et al.*, 1995). This book focuses on international transfers within the same sector, namely the water management sector, that occur between actors representing different countries and/or governance levels. This includes transfers in which actors of one country transfer knowledge to/from actors of another country as well as transfers in which national or subnational actors translate knowledge to/from the supranational level. As we believe that actors, their activities and interactions are of crucial importance in policy transfers, we conceptualize policy transfer as an interactive process among the actors. Regarding the objects being transferred in a water management context, we focus on knowledge about water management and water governance. This knowledge can take the form of policies, programmes, ideas, concepts, methods, technologies and the like. Thus, in this book, policy transfer refers to *the interactive process by which actors use knowledge (about water management and/or governance) that was developed in one context (country or governance level) for the development of water management and/or water governance in another context*. In analysing these transfers, this book uses the perspective of 'context matters' as a starting point, which explains the reasoning behind the choice of 'International Studies on Contextual Water Management' as the subtitle of the book. The main assertion underlying the notion of 'contextual water management' is that actors who shape the course and outcomes of a transfer process are influenced by the context in which they act (Bressers and Lulofs, 2010; Bressers, 2004; Bressers, 2009; De Boer and Bressers, 2011). Among the central aims of this book is therefore to understand how, where and why context affects actors involved in a transfer process and what this effect implies for the way that the relevant knowledge should be received under these circumstances.

1.3 Objectives and approach of this book

Recognizing the importance of contextual water management, this book aims to critically discuss the transferability of modern water management and governance concepts by analysing the contextual factors specific to the particular transfer being studied. The academic merit of such an endeavour is that it increases the precision and understanding of what is known about policy transfers and how policy transfers can best be placed in the appropriate context for study and learning. The practical relevance of such an analysis is that it helps to understand the specific context under which modern water expertise is derived and thus enables practitioners to better determine the value and the context under which it is best exported. Through this book, we hope to make policy designers, consultants and researchers more aware of the pitfalls of unprepared (or even well informed and careful) export and dissemination of ideas.

This book builds upon a collection of eleven international studies. To provide a breadth of examples from which different contextual insights can be garnered, studies are chosen to show a wide range of different national contexts and transfers. Some studies are based on multiple case studies whereas others address only single cases. All of the chapters include reflections on the transferability of knowledge about water management or governance. This does not mean that all of the cases describe or are based on an actual transfer. Some studies are rather examples of prospective evaluations, implying that the transferability of an object is assessed before the transfer takes place (Mossberger and Wolman, 2003). Some studies also question whether the process under study actually reflects a transfer or not. Various chapters further critically reflect on how a transfer benefits its receivers and pay special attention to explicit discourses and narratives that are used by the actors involved.

This book is not based on a comparative research design to avoid imposing a simplistic framework to the heterogeneous studies. We do however seek to compare the practical examples that are presented in various chapters along a number of lines of interest. To enable a valuable comparison while not forcing a strict pre-definition of the types of transfers included, all authors were asked to reflect on the following questions, when applicable:

1 What characterizes the transfer process? What idea is transferred and how, if at all? Who or what promotes the idea? To what extent is the transfer voluntary or coercive?
2 What characterizes the context(s) of the study? In which context was the object of transfer developed? To what context was or could the object of transfer be transferred? What are the differences between these contexts?
3 What is the effectiveness or added value of the transfer? What makes the transfer (potentially) successful or beneficial, or not? For what reasons is the transfer successful or beneficial, or not?
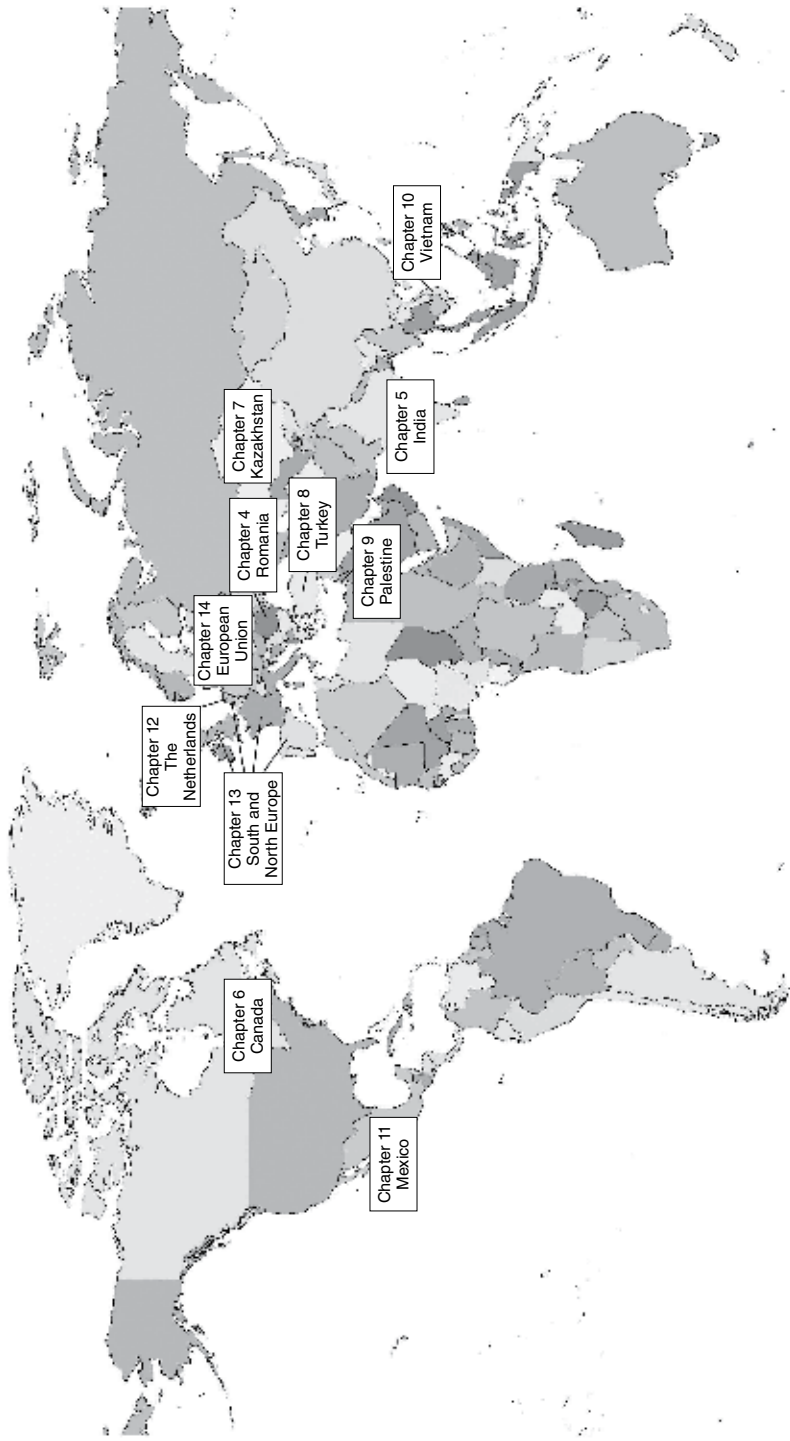
Figure 1.1 Geographical location of the cases included in the book.

Chapter 10
Vietnam

Chapter 7
Kazakhstan

Chapter 5
India

Chapter 4
Romania

Chapter 8
Turkey

Chapter 9
Palestine

Chapter 14
European
Union

Chapter 12
The
Netherlands

Chapter 13
South and
North Europe

Chapter 6
Canada

Chapter 11
Mexico

Our case study selection did not aim to include specific continents, regions or countries. Nevertheless, the book has a wide geographic coverage with cases from three continents (Europe, North America and Asia). Figure 1.1 shows the geographic location of the cases that are included in various studies. Moreover, the book elaborates on transfers regarding a variety of water management issues such as flood risk management, drought, urban agriculture, drinking water provision and climate change adaptation. Incorporating a diverse range of transfers related to water governance and management is valuable for two reasons. First, it reflects the diversity occurring in the field of policy transfer. Second, it reflects the complexity and interconnectedness between the interactions taking place before, during and after policy transfers. Since the literature available regarding this more critical view of policy transfer is limited, we envision this breadth as serving the purpose of enlightening further studies into different aspects and types of transfer.

Throughout the chapters of this book, a number of different yet prevalent ideas can be found related to modern water management and governance. Additionally, the chapters incorporate context-specific elaborations of the variations that are experienced and understood related to the theoretical ideas about policy and knowledge transfer. As such, the theoretical underpinnings about contextual water management and governance that have been developed at CSTM (Twente Centre for Studies in Technology and Sustainable Development at the University of Twente, the Netherlands) are supported in the following chapters with a breadth of theories, frameworks and ideas.

1.4 Structure of the book

Given the plethora of theoretical concepts that are applicable to understanding the interactions taking place around the world in the name of improved water management, the editors have chosen to include two theoretical chapters to collect this vast expanse of literature and explore the various ways that improved water management is given meaning. Chapter 2, the first theoretical chapter, introduces three key concepts in modern water management – integrated water resources management, good water governance and participatory water management – and explains the concept of policy transfer. Following this, Chapter 3 provides an introduction of the Contextual Interaction Theory. A number of authors use the theory as the conceptual lens through which they view the interactions taking place in their cases. This theory enables a parsimonious analysis of these interaction processes and facilitates the inclusion of a wide variety of contextual factors to be systematically taken into the analysis.

The theoretical chapters are followed by eleven empirical chapters that offer a multitude of interesting theory-guided case studies. For easy reference throughout the book, Table 1.1 provides an overview of the contents of these chapters.

Table 1.1 Overview of the empirical chapters

Chapter	Location	Case study	Type of knowledge	Scope of chapter
4	Romania	Three regional projects supported by the Netherlands	Concepts, methods and technologies in flood risk management	Influence of context on the effectiveness of a transfer process
5	India	Local project supported by the United States	Water drainage method (soak pit)	Assessment of the collaborative effort
6	Canada	Provincial level, prospective evaluation	Tools, techniques and procedures in the protection of drinking water sources	Contextual considerations shaping transferability
7	Kazakhstan	National level, translation of global discourses	Water policy innovations including IWRM and river basin organizations	Role of international and local discourses
8	Turkey	National and local levels, contestation of a global discourse	Public participation in irrigation management and hydropower planning	Contested nature of a concept and influence of context
9	Palestine	Local projects, implemented with international donors	Multistakeholder partnership approach in water supply and waste management	Influence of fragile setting on the applicability and effectiveness of transfer
10	Vietnam	Provincial level, transfer of international commitments	Integration of agriculture and wastewater management in urban areas	Role of local governance systems on the lack of transfer
11	Mexico	Basin level, transfer of international management principles	River basin councils (basin management and public participation)	Influence of contextual factors on the efficacy of transfer
12	The Netherlands	National and local levels, translation of an emerging discourse	Adaptation to climate change in a water management context	Influence of local context on adoption process
13	Four European countries	Basin level, change of governance regimes	Adaptive responses to drought and water deficiency	Role of contextual factors in achieving an adaptive regime
14	European member states	(national levels, prospective evaluation)	Integration of nature policies and water management (Natura 2000 and Building with Nature)	Transferability of emerging best practice

As Table 1.1 demonstrates, the collection of empirical chapters analyses the phenomenon of 'policy transfer' from different perspectives. Some chapters examine the transfer of policy knowledge that is established through methods, technologies, expertise, know-how, etc. Other chapters reflect upon the transfer of international concepts or emerging concepts. The chapters are organized accordingly into three different parts:

1   transferring established knowledge (Chapters 4 to 6)
2   transferring an international concept (Chapters 7 to 11)
3   transferring an emerging concept (Chapters 12 to 14)

In Chapter 15, the editors conclude the book with a reassessment of the value and validity of policy transfer in the global water management sector and provide a preliminary assessment of the importance of contextual factors observed throughout the chapters.

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