COMPARATIVE EMERGENCY MANAGEMENT

Examining Global and Regional Responses to Disasters

DeMond Shondell Miller • Jason David Rivera

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Foreword: Insights on the Role of Regional Collaboration

Disaster management has long been implemented and researched in silos and treated as national, internally handled issues. Events such as the Indian Ocean tsunami have started to make people realize that the silo approach is not working. Because hazards and disasters do not respect national borders, we must introduce bold initiatives that reduce barriers to building disaster-resistant regions. This is an increasingly difficult issue when you consider that 85% of natural hazards impact people in developing countries [United Nations International Strategy for Disaster Reduction (UNISDR) and Inter-Parliamentary Union Disaster Risk Reduction 2010]. As a result, the concepts of disaster reduction, risk reduction, and disaster mitigation have become popular topics. In the past ten years, direct disaster damage costs have risen from US$75.5 billion in the 1960s to almost 1 trillion dollars [Munich Re 2002; *Centre for Research on the Epidemiology of Disasters* (CRED) 2009].

Although disaster risk reduction may be the topic *du jour*, we as scholars, practitioners, community leaders, and citizens must strive to work together to be more inclusive in addressing issues ranging from poverty to sustainable development to climate change. This can be accomplished through many collaborative avenues that work to improve construction, education, policy changes, economic development and stability, and social development. However, these collaboratives among disaster researchers and practitioners must also involve stakeholders at all levels of government and community. Regionalism is one of the tools that can be used to make this happen.

The Importance of a Regional Collaborative Approach to Disaster Mitigation and Preparedness

Why is regional collaboration so important? It is so basic and straightforward. However, in reality, it is probably one of the most important questions we can ask. As the world continues to globalize and countries become more interdependent, it is essential that we start looking across and outside our borders (whatever they may be—city, district, state, country) to address the issues of risk.

We see it time and time again—disasters know no borders. The 2004 Indian Ocean tsunami directly impacted 13 countries on two continents and indirectly many, many more [AlertNet 2010]; Hurricane Katrina made a direct hit on four states in the United States but forced people in all 50 states to seek refuge; and the 2010 floods in China have impacted 28 provinces and more than 140 million people [*China Daily* 2010]. These events clearly illustrate the need for regional cooperation.

The key becomes defining "regional." Is it a series of states within a single country? Or a series of countries that border each other? Possibly a series of countries that share a fault line or a tsunami potential? It may be all of these things in a single country, depending on the risk and the hazards. Or does it even have to be defined? And who should define it? I would offer that the concept is self-defined in any way needed to help protect people and their livelihoods. We need to get beyond the confines of definitions and look at the outcomes. These outcomes are what will protect people. If different methods reduce disaster risk and help to protect people (and not put others at risk), then we should consider them.

To make a determination on what is "good" mitigation, there needs to be solid research from which to pull from. The disaster researchers of the world need to unite and start to work together. There needs to be integration across disciplines in the name of good science. Social scientists need to be work with physical and natural scientists to develop research that considers all aspects of an event—the geophysical nature of the hazard and risk as well as how people make decisions and the socioeconomic and cultural influences. This is simple enough but is not being practiced across the board. The Integrated Research on Disaster Risk* (IRDR) program is attempting to accomplish this by bringing together researchers from

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* The IRDR program, established in Beijing, China, is cosponsored by the International Council for Science (ICSU), the International Social Sciences Council (ISSC), and the International Strategy for Disaster Reduction (ISDR). It is designed to address the impacts of disasters on regional and global scales and brings together the combined talents of the natural, socioeconomic, health, and engineering sciences from around the world. IRDR will focus on hazards related to geophysical, oceanographic, climate, and weather-triggered events—and even space weather and impact by near-Earth objects. The IRDR has three major research objectives: (1) to address the gaps in knowledge and methods for the effective identification of disaster risks; (2) to better understand just how decisions can contribute to hazards becoming disasters—or reduce their effects; and (3) to develop knowledge-based actions that will reduce risk and curb losses (for more information, see www.irdrinternational.org.

various disciplines to study disaster risk reduction problems from an integrated approach through both research and consultative forums. This allows countries and regions to learn from each other as well as modify successful programs to fit their social and political context.

The collaboration among researchers also allows comprehensive findings to be shared with practitioners who subsequently can implement merited approaches to help protect people. To better facilitate this process, the research community needs to do a better job of transferring their knowledge and findings to the practitioner community in language and formats that are more easily understood. This will allow for good mitigation and preparedness to be implemented, improved upon, and shared. We need to start doing a better work together to improve disaster risk reduction. This means across borders, disciplines, and sectors.

The Role That Regional Partnerships Play in Disaster Mitigation and Preparedness

Regional partnerships play a key role in disaster mitigation and preparedness. A flood can cross a border—why shouldn't the solution to the flood? The recovery and mitigation need to be done in cross-border collaboration as to not increase risk to those downstream or on the other side of the border. Communities are often living and working on both sides of a given border. Because few communities exist in isolation, mitigation efforts need to be designed in ways that do not view communities as such.

The goals must be self-defined. Sitting in my office in Beijing, I cannot tell you what a regional collaboration should look like for the Andean ridge countries of South America. They must define that within the context of their political and social needs. But what we need to be doing is sharing information. LA RED does just that in Latin America and works in conjunction with organizations throughout the region; other regional organizations include Centro de Coordinación para la Prevención de los Desastres Naturales en América Central (CEPREDENAC) and the Comité Andino para la Prevención y Atención de Desastres (CAPRADE). Each region has its own unique issues, concerns, and vulnerabilities to natural hazards; however, where stakeholders have similar goals and common interests, sharing what works and what does not work can become a common practice.

We need to stop arbitrarily trying to set goals and plans for other countries and recognize that knowledge comes from multiple sources. At the end of the day, what works well in Asia may not work in Africa or Europe. We must allow for unique differences while still practicing good mitigative techniques. We cannot "impose" our "best practices" on others. Personally, I do not like the term "best practices." How do we determine what is best? Everything is filtered through our personal cultural, educational, and political background. Who can single out any one practice and say it is better than something else? If it is helping to protect the people and

the property from disaster, then *it is* a "best practice." There are many local and regional emergency management strategies, and all have been modified to fit the contexts and culture in which they are used. However, for the most part, we fail to disseminate and promote these successes. Disaster researchers and practitioners need to get better at capturing the successes and promoting them in all arenas.

Moreover, when we use the term *lessons learned*, it begs the question, have we really *learned* any lessons? If we have, then why are we still making the same mistakes? Why do losses from natural disasters continue to rise? Capturing what works (and does not work) as well as a better understanding *why* things are working (or not) is key. Through the FORIN* initiative, the IRDR is trying to do just that. Through various research techniques, scholars and practitioners will be able to trace back the origins of the disaster and the fundamental causes by probing more deeply into the complex and underlying causes of growing disaster losses. Such efforts will require a new commitment than previous research conceptualized, new institutional arrangements, and broader interdisciplinary teams [Burton 2010].

Sustaining Regional Collaborations

Regional collaborations can be sustained over time—if the stakeholders have invested the time to develop positive relationships. To just sign a partnership agreement is not saying much other than "we like how you think" or "that seems like a good idea that we can work with." It becomes a matter of taking steps beyond that to make the regional collaboration work. The agreement needs to be specific in what each organization can do and how they can work together. It is much like a seed a farmer plants. The seed will not grow without water, sunlight, and nurturing. Regional collaborations are the same way. The partnership agreements are nothing more than the seed planted in the ground.

It is important to recognize that many countries have acknowledged these issues and ideas and have begun to address them. Worldwide, more than 60 countries have developed National Platforms for Disaster Risk Reduction. Disaster risk reduction works. The Multi-Hazard Mitigation Council found that, for every dollar spent on mitigation, it saves four dollars next time. This is demonstrated by China's effort to reduce the impacts of flood. They have spent US$3.15 averting losses estimated at US$ 12 billion [Department of International Development (DFID) 2004].

As you read through the chapters looking at emergency management around the world, I encourage you to think about this fact and what could be done in terms of additional mitigation and development if money were better spent. According to the World Bank and the U.S. Geological Survey, if US$40 billion were invested in mitigation and preparedness, the worldwide economic losses from disasters could

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* The Forensic Disaster Investigations are one of the research initiatives of the IRDR [see Burton 2010, p. 36].

be reduced by US$280 billion [DFID 2004]. Now think, if the $280 billion saved were reinvested in mitigation, it would amount to a savings of over $1,960 billion worldwide. The economics alone demonstrate that we must shift the focus from response to mitigation. This book provides insights into topics of disaster and hazard management that emphasize regional approaches that continue to be salient. Each section focuses on issues that influence the development of regional collaborations within different geographic regions of the world in order to illustrate the dynamics at play across different communities, cultures, nations, and international relations. I challenge each of you to reflect upon the examples provided throughout this book so that we, as a global community, may move away from a responsive culture of emergency management policies and practices and toward regional-collaborative (however you define *regional*) mitigation strategies and policies that reduce disaster and hazard risk.

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Preface

The twenty-first century has witnessed some of the most devastating disasters in recent history. More striking than in the past is the impact that these events have on the global human society as opposed to just local populations. Although local communities tend to suffer the brunt and initial consequences of disaster, many disasters today have spillover effects that are detrimental to regional government structures, nations, and even a host of nations that inhabit a geographical region. Researchers have acknowledged the fact that disasters, natural as well as technological, are occurring with greater frequency and magnitude throughout the world. In addition to these types of disaster, the world continues to be plagued by human-induced tragedies such as political and social violence, which are in some cases just as devastating to the natural and urban environment as severe natural phenomena. When we observe some of the most recent devastating events to impact entire regions, such as the Deepwater Horizon BP oil spill in the Gulf of Mexico, the Indian Ocean tsunami, Hurricane Katrina, the recent 7.0 magnitude earthquake in Haiti, and flooding in West Africa the notion of developing

better emergency management policies, procedures, and cooperation becomes all the more relevant. In the aftermath of these events, this book serves as a call to action. It is a call for citizens of the twenty-first century to recognize and act to reduce regional infrastructure vulnerability while building secure interdependent networks sustained by trust among regional stakeholders evidenced by informal and formal agreements to work to resolve problems.

Although the costs of the these events are initially measured in lives taken, or the number of people missing, there are other less tangible impacts that have the ability to result in subsequent disasters for individual communities, subnational regions, nations, and even international relations. Changes in economy, international or internally displaced persons, political destabilization, violence, and a whole host of other issues affect the manner in which populations and societies recover from disaster, but also the success of that recovery. At the point where these external pressures begin to impact the recovery of societies, it is sometimes too late and difficult to make impactful policy changes that will have short-term advantageous results for disaster-affected populations. For this reason, changes must be made at the other end of the disaster management spectrum, during the disaster management, mitigation, and response-planning stages of emergency management. By placing more time and effort into emergency management planning, and focusing on mechanisms that can streamline and standardize emergency mitigation and response across political subdivisions, many of these subsequent disaster impacts can be avoided, thereby increasing the potential of local and regional societies to recover from disasters.

This volume contains the work of researchers investigating ways in which societies experiencing regional environmental threats have been forced to find new ways of regionally coping with vulnerabilities to disaster events, and have entered into new ways of developing emergency management policies at the subnational and international levels. We, along with the contributors, offer this research as an opportunity for thinking creatively in hopes that these lessons are integrated into new development projects in an equitable manner that not only is advantageous for specific geographic populations, but for all human society. Furthermore, we bring forth this work as a way to foster dialogue that will serve as a catalyst for the reduction of social vulnerability and build local and regional capacities to withstand environmental assaults. In doing so, we believe this book will contribute to the establishment of a subfield of regional disaster interdisciplinary study to combine sociology, public policy, economics, disaster studies, history, business, emergency management, critical infrastructure, tourism, and peace studies to address, among other things, social, financial, and physical vulnerabilities, risks, organizational resilience, war, and ethnic conflict as contributing externalities to regional security.

We express our sincere appreciation to all the contributors for their tireless work and continued research in the disaster research field. It is through this forum, *Comparative Emergency Management: Examining Global and Regional Responses to*

Disasters, that we share unique, independent yet related case studies that serve to inform, make important recommendations, and empower societies to become more prepared for the challenges in humanity's future.

Jason D. Rivera
DeMond S. Miller

The Editors

DeMond Shondell Miller is a professor of sociology and environmental studies and director of the Liberal Arts and Sciences Institute for Research and Community Service at Rowan University, Glassboro, New Jersey. He has worked as principal investigator to facilitate research projects involving natural and technological disasters, environmental issues, and community satisfaction. His primary area of specialization is environmental sociology (disaster studies and the study of the social construction of place), community development and community organizing, and social impact assessment. Dr. Miller has presented and published several professional papers; recent examples of such work can be found in *Space and Culture: An International Journal of Social Spaces, Journal of Black Studies*, *The Journal of Public Management and Social Policy*, *Sociological Spectrum*, and *The International Journal of Culture, Tourism and Hospitality Research*. Recently, he has contributed to several edited volumes including *Through the Eye of Katrina: Social Justice in the United States* and *The Sociology of Katrina: Perspectives on a Modern Catastrophe*; he is the coauthor of *Hurricane Katrina and the Redefinition of Landscape* with Jason D. Rivera (2007) and coeditor of *African American and Community Engagement in Higher Education: Community Service, Service Learning and Community-Based Research* with S. Evans, C. Taylor, and M. Dunlap (2008) and a coeditor of *How Ethnically Marginalized Americans Cope with Catastrophic Disasters: Studies in Suffering and Resiliency* (2010) and *Community Disaster Recovery and Resiliency: Exploring Global Opportunities and Challenges* (2010), with Jason D. Rivera. He is currently engaged in research on international environmental policy, coastal and maritime sustainable tourism, and the ongoing social impacts of climate change in the Mediterranean, Hurricane Katrina and the Deepwater Horizon Oil Spill.

Jason David Rivera is a research associate in the William J. Hughes Center for Public Policy at The Richard Stockton College of New Jersey. His research focuses on social vulnerability to natural and manmade disasters with an emphasis on minority experiences. Additionally, his research highlights institutional structures that have historically perpetuated social vulnerability within minority and low-income communities. His research findings have been incorporated into policy

recommendations that make mitigation, response, and recovery more efficient and effective. Examples of his work can be found in the *Journal of Black Studies*, *Journal of Applied Security Research: Prevention and Response in Asset Protection*, *Terrorism and Violence*, the *Journal of Public Management and Social Policy*, *Sociological Spectrum*, *The Journal for the Study of Radicalism*, *Space and Culture*, *The Sociology of Katrina: Perspectives on a Modern Catastrophe*, *Through the Eye of the Storm: Social Justice in the United States*, and *Dangers in the Incommensurability of Globalization: Socio-Political Volatilities*. He is a coauthor of *Hurricane Katrina and the Redefinition of Landscape*, with DeMond S. Miller (2007) and a coeditor of *How Ethnically Marginalized Americans Cope with Catastrophic Disasters: Studies in Suffering and Resiliency* (2010) and *Community Disaster Recovery and Resiliency: Exploring Global Opportunities and Challenges* (2010), with DeMond S. Miller.

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Acknowledgments

Collaborating on this volume has been challenging, intellectually stimulating, and enjoyable. We are grateful to all of the staff at Taylor and Francis, namely Mr. Mark Listewnik and Ms. Jessica Vakili, Mr. Richard Tressider and Ms. Amor Nanas. Moreover, we thank the contributors, insight who shared their collective research and professional experiences.

We also thank Mr. John J. Reiser, Mr. Christopher Gonzalez, and Mrs. Marianne McCulley for their contributions to this collaborative effort.

We extend our appreciation and gratitude to Mrs. Cynthia Bush for all of her editorial assistance in making this book a reality.

Finally, we wish to express our special appreciation to Mrs. Andrea Rivera for the encouragement, editorial guidance, and continued support throughout the years to see this and other projects come to fruition.

AFRICA AND THE MIDDLE EAST

II

Chapter 6

Critique of Stakeholder Participation and Decision-Making Processes Affecting the Design and Implementation of Transboundary Water Governance Projects Bordering Vulnerable/ High Risk States: Lake Chad and Basin, Danube and Tisza River Basin

Filip Aggestam and Stephanie Hodge

Contents

Introduction

Over the past century, the demand and variety of ways by which humans have modified the biological, physical, and chemical characteristics of ecosystems has increased dramatically. With regards to water, technological development has enabled societies to improve and provide services such as sanitation, food production, fisheries, power generation, drinking water, and recreation—services that we today consider an essential dimension of human welfare and development. This ever-increasing pressure on the utilization of an often shared and finite resource also exemplifies the pressing need to improve ecosystem management services, collaborative planning, and cooperation between different institutions, states, and individuals. On the whole, the growing stress on our natural environment, coupled with the uncertain impact of climate change, has in recent years resulted in an increase in efforts to develop and apply alternative management strategies for the use of natural resources [Azqueta and Delacamara 2006; Xevi and Khan 2005].

But despite great leaps forward in our understanding of how to manage limited resources, present day water governance constitutes an increasingly complex web that integrates technical and scientific knowledge, legal requirements, socioeconomic aspects and multistakeholder participation [Baggett et al. 2006]. One dimension of this development has, for example, been the growing international acceptance that environmental projects need to be inclusive and that relevant stakeholders are incorporated into the decision-making process [HarmoniCOP 2005; Hare and Pahl-Wostl 2002; Brugha and Varvasovszky 2000]. In addition, in our efforts to comprehend the effects of climate change and the ever increasing pressure on finite land resources—frequently causing overexploitation and land degradation—we have also seen an intensification in research on societal resilience to natural and manmade disasters. This particularly in the aftermath of disasters such as the Indian Ocean Tsunami [Clark 2007] and Hurricane Katrina [Baker and Refsgaard 2007]—catastrophes that have drawn attention to many of our societal vulnerabilities. These events have once again illustrated how low- and middle-income countries and marginalized sectors of society are particularly at risk.

With this background in mind, resilience is seen as a desirable property of natural and human systems. A development that has encouraged several fields of research to refine and further develop strategies relevant for community disaster recovery and resilience. Science rooted in studies of resilience is consequently increasingly derived from multidisciplinary research from a broad range of theories and methodologies [for more details, see Baker and Refsgaard 2007; Klein et al. 2003]. For that reason, resilience and related concepts, such as vulnerability and adaptation, are receiving renewed consideration in connection to measures to counter future climate change [Klein et al. 2003]. Perhaps more importantly for this chapter, efforts have also been made to better understand underlying social patterns that define resilience and human coping strategies when faced with a disaster.

As disasters often carry a high cost in terms of human lives (on a global, regional, or local scale) and the potential damage to ecological and socioeconomic systems is great, catastrophic events provide an opportunity for better understanding development efforts. This is because such events represent a situation in which institutional systems have been unable to prevent damage. A condition from which we can draw valuable lessons for the future management of our natural environment.

Community Disaster Recovery and Resilience

While it is important to have a common understanding of the concepts involved in this chapter, we will not provide an overview of the conceptual development of resilience. In this case, the meaning of resilience will be generic. For example, as defined by the Oxford English Dictionary, a resilient individual is "able to withstand or recover quickly from difficult situations." In a broader sense, resilience will refer to a socioecological system's ability to tolerate disturbance and recover to its earlier state. In theory, resilient communities should be able to withstand extreme events and recover rapidly from disasters whenever they occur. Resilience is as such dependant on careful planning and organization of society, both to limit the impact of a disaster and to facilitate the recovery process. But such comprehensive planning would require an all-embracing strategy to reduce risk and exposure. A strategy which would have to take into consideration factors such as age and family structures, spatial patterns, socioeconomic factors, gender issues, education, cognitive factors, social and ethnic networks, etc. [Linnerooth-Bayer and Mechler 2007].

Generally speaking, these elements are all interrelated and will have a significant influence on any community's capacity to recover from a disaster. A truly comprehensive strategy would therefore have to include all the elements from our natural environment, as well as human-use systems. This is complicated further by how systems constantly change over time, representing a network of interactions that is significantly dependent on the context. This dynamic aspect of communities requires the near impossible, namely, a complete and continuous understanding of the interactions taking place in a given system [Tobin 1999]. But regardless of the difficulties associated with managing and planning for disasters in real-life, an important development in recent years has been the increasing recognition in policy that ecological and human systems are interlinked. It is becoming clear that resilience relates to the function and interaction of the system rather than to the stability of the components, or the ability to maintain or return to a state of equilibrium [UN/ISDR 2004].

Thus, reducing vulnerability to disasters represents an ongoing and iterative process that incorporates planning, design, implementation, and monitoring, as well as awareness-raising and information collection. At the community level, this means, among other things, being able to improve current living standards in the face of changes in the environment that may have an impact on peoples' livelihoods. This

is particularly important in relation to climate change in high-risk states, where reducing vulnerability requires having the correct mechanisms in place, access to technology, resources, and expertise to cope with the process of implementation. In relation to the management of vulnerable ecosystems, part of the solution to this problem is offered by active stakeholder participation as a measure for reducing risk and strengthening recovery mechanisms.

The question now arises as to how participatory management relates to community disaster recovery and resilience when developing strategies to reduce vulnerabilities to natural hazards. The next segment will be dedicated to discussing the value of stakeholder participation as a means to improving community-based disaster risk recovery, management, and planning.

Public and Stakeholder Participation

> "[a]ll too often still silos of knowledge get produced that fail to help make systems and communities more robust to extremes and to change" [Vogel et al. 2007, p. 352].

To successfully manage and plan for disaster recovery is not only dependent on costs, available technologies, and relevant expertise, but it is also dependent on understanding and identifying the social context in which a given institution will operate. Unless the public and all relevant stakeholders are engaged in the decision-making process, project managers might find it difficult to be the facilitator of knowledge and information. This would have a direct impact not only on efforts to manage natural resources, but also on a community's capacity to recover from a disaster [Bagett et al. 2006]. Hence, the implementation of a project dealing with disaster recovery at the community level is dependent on the overall acceptance of its strategy by all affected parties, including the public.

Participation may therefore provide decision-makers with important knowledge if there is a structured and transparent mechanism that supports open dialogue with stakeholders [Johnston and Soulsby 2006; Wattage and Mardle 2005]. For example, engaging stakeholders in a two-way communication process could (at any stage) have a positive influence on planning, implementation, and management. The application of a stakeholder analysis and participation strategy could help to ensure that the right people are brought into a project at the right time to allow for discussion, learning, and agreement in connection to the use and management of a limited and/or shared resource.

In the cases that will be presented in this chapter, the emphasis is on stakeholder participation within the water sector. This choice has predominantly been made as this field is often characterized by unpredictable events, such as flooding or severe droughts. It is consequently suitable for studying the processes underlying community-based disaster recovery and resilience. However, to begin, it may be appropriate to briefly consider a key area in this field, namely, risk management. Imagine, for example, a

water expert who might characterize flooding risk in terms of public health. In a situation such as this, you would most often find that the public's definition of risk would represent a much more complex construct. For instance, as mentioned above, the facilitation of information with regards to risks associated with flooding is dependent on how believable the public considers the information to be. As a result, the institutions credibility is significantly linked with the level of trust exhibited by stakeholders and the public. With this in mind, engaging in superficial and inconsistent participatory management may in fact have long-term counterproductive effects, as well as damaging socioeconomic consequences [Sadoff and Grey 2002]. Consequently, social trust constitutes one significant argument in favor of participatory management at the community level. Not only is it relevant for the long-term management of limited natural resources, but also the erosion of social trust can seriously limit an organization's ability to reduce natural hazards.

The purpose of this discussion is simply to emphasize that evaluating and engaging elements of the public and stakeholders may help to assess and guide knowledge requirements and risks associated with disasters. If the process of managing natural hazards is perceived as being under joint control, it seems more acceptable than if managed by others. This is particularly important within water resource management, as it is typically a technology- and expert-driven field. Besides the unpredictability of future events and the quality of information, the recognition and analysis of these social limitations increases the usefulness of stakeholder participation, as well as the potential it possesses to effect a community's readiness for a disaster.

Using stakeholder participation and transboundary cooperation as a medium for analysis, this chapter aims to explore their relevance to the concept of community-based disaster recovery and resilience. A brief overview of the relevant concepts employed throughout this study can be found in the appendices. The following section will present two cases focusing on linking various aspects of participatory management with resilience and disaster recovery. The third section will review the results presented in the case studies and draw conclusions in the context of international development interventions and the management of shared natural resources in risky ecosystems. Finally, the fourth section will present a set of policy recommendations related to participatory management and transboundary cooperation.

Case Studies

A case study approach is employed to compare stakeholder participation and transboundary cooperation efforts across different countries. The approach is based on the following:

■ Review and comparative analysis of publicly available project documents
■ Semistructured interviews and contributions from an online forum conference.

The combination of interviews and document analysis bolsters validation by allowing triangulation of data sources. The chapter relies considerably on the inside views of program officers and practitioners—individuals who are in a good position to describe their views and understanding of the participatory process, incorporation of stakeholder input, and policy decisions.

Case 1. Engaging Stakeholders in Practice: Managing the Danube and Tisza River Basin

One dimension of the changing water sector in Europe has been the democratization of the decision-making process and policy-making at national, regional, and international levels. The European Union has, for example, integrated this consideration into its Sixth Environmental Action Programme.* As a consequence, European Union member states are now required to continuously introduce scientific input into the environmental policy process [European Commission 2001].

With this in mind, we have seen an increased emphasis on the incorporation of stakeholder interests and the promotion of public participation when planning and implementing projects within the water sector. It is becoming regular practice to characterize and categorize levels of interest and power relations among stakeholders and the public. Yet in many cases we still find that project managers and decision-makers apply a soft (or deliberative) decision-making approach in which a key individual is trying to perceive the whole picture, observing it from various angles, and finding the best alternative through expert intuition [Wierzbicki et al. 2000].

Research on decision-making in the face of difficult choices suggests that project managers are still likely to use a range of simple strategies to address a complex decision problem/process, such as simple heuristics [Gigerenzer and Tood 1999] or cognitive rules of thumb [McDaniels et al. 2003]. Despite some beneficial aspects of simplifying the decision-making process, this is not applicable to all environments, particularly regarding individual decisions for the following reasons: (1) decisions are seldom optimized given situations of uncertainty; (2) access to information is limited; and (3) individual optimization could lead to conflicts in situations with a limited number of stakeholders (as is often the case in water governance) [Wierzbicki et al. 2000]. As expressed by Castelletti and Soncini-Sess [2007, p. 18], "Ignorance is being unaware that our awareness is imperfect. An imperfect awareness implies uncertainty and uncertainty generates apprehension." Furthermore, it is argued that decision-makers often have a tendency to remove the problem of uncertainty by promoting deterministic scenarios and models to provide exact estimates. In essence, hiding uncertainty by trying to make their evaluations perfect.

Besides these issues, project performance is not only influenced by individual decision-making strategies, but also by behavioral biases (or contextual preferences).

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* See http://ec.europa.eu/environment/newprg/index.htm.

A dimension that may have a significant impact on the decision-making process [Chae et al. 2005]. For instance, Wierzbicki et al. [2000] has suggested that decision-makers form their own aspirations adaptively through a learning process that is satisfied if the aspiration levels are attained for the decision. Instead of optimizing, this subjective aspect of decision-making may make it difficult for the decision-maker to distinguish between facts and value judgments—an issue that could greatly influence the perception of a problem and the use of input from stakeholders and communities [Castelletti and Soncini-Sess 2007].

There is, consequently, a need for exploration of the implications of these biases in real-life decision-making and their effects on stakeholder participation. An improved understanding of the behavioral and cognitive processes at work will provide a better position from which to truly judge how stakeholder participation is working at project level.

Aim and Scope

The aim of this case study will be to discuss what constitutes a stakeholder and participation according to project managers and practitioners. An emphasis is placed on projects run through the United Nations Development Programme (UNDP), the International Commission for the Protection of the Danube River (ICPDR),* and related organizations. Within this framework, the purpose will be to analyze variations in perspectives, definitions, and approaches toward stakeholders and participation among executive decision-makers in water-based environmental projects along the Danube and Tisza River Basin, as well as the Caspian Sea. Three main objectives have been identified:

- Define how project managers and decision-makers perceive stakeholder participation and how they fit into the context of project management;
- Determine whether there are any prevalent behavioral biases among project managers that may influence (1) how participation is carried out and (2) how stakeholder input is interpreted;
- Evaluate whether any applied stakeholder participation strategy has had an influence on decision-making and project implementation.

The independence of the selected organizations and projects make a strong argument for comparing the common elements that appear in them, particularly as both UNDP and ICPDR are involved in projects concerning the Danube region and the Caspian Environment Programme (CEP).† As such, a comparison between

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* ICPDR is based on the Danube River Protection Convention. ICPDR operates to ensure the sustainable and equitable use of waters and freshwater resources in the Danube River Basin region. For more information see http://www.icpdr.org.

† See http://www.caspianenvironment.org.

perspectives and approaches toward stakeholder participation and subsequent use of input during decision-making can help to clarify whether current participation strategies are effective. The purpose will not be to compare different stakeholder participation methodologies or to determine their effectiveness. The emphasis will rather be on a different dimension of participation, namely, how project managers employ input from stakeholders in the decision-making process. Therefore, descriptions of the different perspectives are used to learn about participation in practice, and to extract some of the common features among those involved in stakeholder participation. As such, it will serve a purpose by highlighting problems and benefits with integrating stakeholders in decision-making.

Method

To enable a comparison between organizations, projects, and people, this study combined a review of project documents and semistructured in-depth interviews. The first phase, a review and comparative analysis of publicly available project documents, was conducted to gain a basic understanding of the applied participation strategies, results, and to evaluate how stakeholder input was used during decision-making. The interviews were aimed at exploring the level and perceived success of stakeholder participation. An approach that enables a comparison between involved decision-makers and helps to clarify their experiences, arrangements, and thoughts regarding stakeholders [Dearnley 2005; Smith et al. 2001]. The selected participants worked at various levels in the United Nations Development Programme (UNDP), International Commission for the Protection of the Danube River (ICPDR), Regional Environmental Centre for Central and Eastern Europe (REC),* International Institute for Applied Systems Analysis (IIASA), Nimfea Environment and Nature Conservation Association,† Caspian Environment Programme (CEP), and the Tisza Biodiversity Program.‡ In addition to the interviews a forum on the topic of new approaches to stakeholder management was held over a full day during an online UNDP conference (more information available on http://www.waterfair .org). A range of water experts, primarily from UNDP, the academic community, and nongovernmental organizations (NGOs) contributed to the forum. Some of the information provided has been extracted to support the discussion on stakeholder participation.

Methods and Data Analyses

The choice to use semistructured interviews is based on the ability to elicit relational data across participants and to provide the interviewer with the flexibility

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* See http://www.rec.org.
† See http://www.nimfea.hu.
‡ See http://www.elotisza.hu (*only in Hungarian*).

to probe and openly explore the participant's thoughts and experiences [Dearnley 2005]. To this end, the interviewer is able to seize upon opportunities to elaborate on values expressed by the interviewee without being restricted to the rigidity of a structured interview [Smith et al. 2001].

There was also a strong element of comparison within the research design. For instance, the interviewer often contrasted stakeholder interests with water resource management issues. This was done to add the depth of comparative research [Triandis 1976; Rose 1991; Lidstrom 1999], but it also allows the participants to obtain a broader view of the difficulties surrounding genuine participation.

The applied methodology is predominantly qualitative but incorporates some elements of quantitative research characteristics. As such, although great care was taken to apply a systematic process, it is reasonable to assume that a certain degree of subjectivity is unavoidable in a study of this nature [more information available in Aggestam 2007].

Engaging Stakeholders and Transboundary Cooperation

Terms such as stakeholders and participation are rather vague when considering the many purposes for which they are being employed. Even more, they are concepts that are becoming increasingly diluted and applied within a wide range of different professional fields [Harmoni 2005; Herman 2005; Hare and Pahl-Wostl 2002]. This becomes particularly apparent when discussing the rationale of engaging stakeholders with project managers and practitioners. The defined approaches (e.g., purpose, scope, indicators, level, and definition of participation) and the context in which stakeholder participation is carried out vary significantly. Within the context of water resources management, this diversity in definitions and participation approaches constitutes a noteworthy obstacle for comparison of project performance and results. But more important, these loose and varying definitions have implications for projects attempting to achieve participatory management. Consider, for example, the impact different interpretations of participation may have on community-based projects striving to reduce risk toward natural hazards.

Against this background, it is apparent that the inclusion of stakeholders, transparency, and community participation is open for interpretation, despite their being essential and required components for environmental projects operating inside as well as outside the borders of the EU. As stated by one of the participants, "The law on participation can only be guided by what project managers intend stakeholder involvement or engagement to achieve."

In relation to the Danube region, there is a history of 15–20 years of interventions. This context represents a clear benefit with regards to the establishment of relationships and building trust within communities [UNDP/GEF 2003, 2005]. As a result, on the part of the UNDP and ICPDR, there is a strong emphasis on stakeholder participation for the Danube River Basin. But these organisations also

rely on the assumption of having a sufficient understanding of relevant stakeholders in the region (an issue this study is unable to confirm).

Regarding public participation strategies for ICPDR, a general roadmap provides details on what needs to be done in connection with their river basin management plans. Part of this process includes milestones for the integration of the communities and stakeholders. One aspect of this integration was, for example, workshops with participants from each Danube country, flood defense, navigation, hydropower, NGOs, and the scientific community [ICPDR 2003, 2006]. But despite this emphasis on participation, the level of stakeholder participation is to some extent still determined by the projects management unit. As noted by one participant, "Stakeholders have an influence on the direction of the projects, if you seriously involve them," illustrating that genuine stakeholder participation depends on the individual project manager's beliefs. As such, within the context of the reviewed projects, most participants seem to agree that engagement is vital. Especially if the stakeholders do not agree with stated project objectives. On the other hand, given the organization's size, what is defined as participation by ICPDR does not necessarily equate to actual engagement on the ground. Even so, by pushing for participation at a national or regional level, it is possible that ICPDR can positively influence community-based participation strategies in regions where this is needed.

Another dimension of the complexities surrounding participation can be demonstrated by a World Wildlife Foundation (WWF)* project that was conducted along the Tisza River Basin in Hungary [WWF 2004]. This particular project investigated gravel abstraction in the Upper Tisza River and its contribution to flooding. As this is not a problem that is immediately apparent for many regional communities, the question is how you can successfully convey the problem to the general public? Moreover, how can you influence the situation so that the public actually becomes concerned about these activities? As this project demonstrated, managing to influence or engage stakeholders became a serious obstacle. As expressed during one interview, "You are lucky if any stakeholder turns up to your workshop." A common statement that illustrates that the successful engagement of communities is not only subject to the relevance allocated by project managers, but also the communities themselves.

In line with this argument, and in connection with participation through ICPDR, one participant expressed that the agricultural sector was considered to be the least successful sector in terms of providing input, while other industries only had limited input. The relevance of this issue concerns the apparent increased interest from sectors such as hydropower and navigation. Stakeholders have become more engaged as a result of the perceived threat from the Water Framework Directive (WFD) [UNDP 2003]. This demonstrates an additional problematic aspect of actually realizing the engagement of vital stakeholders. Only when a project or, in

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* See http://www.panda.org/about_wwf/where_we_work/europe/what_we_do/danube_carpa thian/blue_river_green_mtn/danube_river_basin/middle_danube/tisza_river/index.cfm.

this case, institution has a certain level of perceived importance would stakeholders make the effort to engage or commit themselves. This issue of perceived relevance is of equal importance within the context of community-based participation.

One explanation, as elaborated by a participant external to ICPDR, is that many NGOs and organizations do not appreciate working with the organization. It should be noted that the reasons for this were not stated explicitly and, furthermore, this view might be a result of individually differing opinions. It does, nevertheless, emphasize the real-life problem created by the perceived distance in-between project managers and practitioners at one end and stakeholders and communities at the other.

In support of this, it became quite clear while speaking to project managers and practitioners that most projects do not actively involve communities in decision-making. This despite the fact that a decision-making body in the Danube region has an obligation to provide adequate information as well as consult with stake-holders. In this case, a literal interpretation of the WFD, as it requires that stake-holders should be heard and considered, while actively involving them as part of the decision-making process is only encouraged—an opinion that seems to be reflected among project managers themselves. As stated during one interview, "At the onset you don't get all the stakeholders, you do the stakeholder analysis, but you don't get all stakeholders on board besides maybe one or two NGOs." But, on the other hand, managers also express the wish to instill a sense of ownership and account-ability among stakeholders. The question is whether this can be accomplished with-out engaging stakeholders in the decision-making body.

As suggested by several participants, it further appears as if project manag-ers often do not even know who the relevant stakeholders are. As a consequence, relevant stakeholders have nothing to do with project implementation up until the point when the course cannot be altered. Therefore, a fundamental problem appears to be that stakeholders are not getting actively involved early enough. Additionally, the process of engaging stakeholders (within the context of UNDP) can be an "often not very satisfactory way of doing it" (interview excerpt). The reasons offered for this were (1) difficulties in persuading governments that it is worthwhile; (2) difficulty finding a good and representative list of stakeholders; (3) problems with engaging stakeholders once they have been identified; and (4) stakeholders having a very narrow and local view of problems.

In contrast with the previous examples, a successful illustration of participation concerns the application of a stakeholder analysis conducted through the Caspian Environment Programme (CEP). In this case, the stakeholder analysis moved from being an investigative tool to a participation strategy. Within the context of the initial analysis for the Caspian Sea, "The notion of stakeholders was expanded from the standard focus, given the level of government permeation into the social struc-tures of the region" [Matthews 2004, p. 10]. The analysis focused on exploring whether there were any "conflicts among stakeholders that may constrain effec-tive interventions" [CEP 2002, p. 3] and the manner in which the stakeholders

and local communities prioritized eight major perceived problems identified by experts [UNDP 2005; CEP 2002, 2005, 2006]. As such, the process (including elements of consultation) managed to generate a reprioritization of project objectives. "Stakeholder groups rated some concerns much higher than experts, whereas others that the experts believed to be the most prominent were ranked far lower than expected" [Matthews 2004, p. 10]. As a consequence, subsequent to the stakeholder analysis, the project changed direction as the original objective turned out to be of low importance to the public. This supports incorporating stakeholder input much earlier in the planning process, as relying explicitly on expert-driven input is clearly not sufficient to adequately formulate the problem environment and structure.

Related to the governance of shared water, it is of interest to note some difficulties in association to the transboundary management of river basins in the Danube region. It has been noted that attendance across countries differs significantly. A problem that primarily appears to be due to different value structures, institutions, and perspectives on the democratic process in the various regions. Since stakeholder participation is a vague term, it could be asked whether participation should be more concretely and strictly defined, so as to make its implementation more homogeneous. Additionally, given these regional and national differences, it raises the question of how you should analyze, engage, and compare communities across national and regional borders. This is especially relevant in connection to the transboundary management of water bodies within the European Union.

Why Engage Stakeholders and Communities?

Questions of why we should pursue community-based participation follow naturally in light of all the obstacles highlighted above. After all, a project manager might say he or she will listen to stakeholders, they may say they will reply to written comments, they may even say they will circulate the decision for comment, but there are many ways in which to illustrate where project managers' (and governments' and institutions') willingness to engage stakeholders and incorporate input ends. "The outcome of many examples of participation is a tragedy because it is a conflict and not cooperation" (interview excerpt). When projects, for example, do not define participation, stakeholders often begin to suspect each other's motives and the process becomes one of conflict rather than cooperation. Moreover, successful stakeholder participation (of any kind) requires trust. As a result, many projects often rely on the specific abilities of a talented facilitator to make things happen. But if the intended engagement is not a sustained effort, there can (in the long term) be a deterioration of trust, causing communities to become uncooperative.

On the whole, there are a multitude of context-specific barriers that might arise during the development of a community-based participation strategy. Nevertheless, during the course of this study, there were a number of issues that were highlighted as being particularly important to take into consideration. These issues relate to the following:

1. Consultative versus active participation. This signifies that projects most often only engage in one-way channels of communication. Stakeholders are, as a result, rarely participating actively in decision-making.
2. Invited versus voluntary participation. During project formulation/planning, it is vital to consider what stakeholder groups are represented, particularly as many project managers often do not make an effort to extract input from the least interested (but often equally important) parties.
3. Obstacles related to stakeholder participation as a protest. Several cases were mentioned in which stakeholders participated during project implementation solely to slow down or prevent the projects from progressing.
4. Alternative motivations of stakeholders. Similar to the third point in terms of what stakeholders are participating. For example, it is most often the most vocal participants, such as an NGO, that provide input, which might provide a skewed perspective of the problem environment.
5. Risks involved with only inviting/engaging already known stakeholders in the project: "My feeling is that a good deal would be won when stakeholder analysis and consultation would be done even before projects start, when there is still flexibility to fully account for their concerns. In existing projects, most budgets have already been earmarked, experts identified, and if stakeholders come up with something new that doesn't fit in directly with existing project structures, it is difficult to include those issues for many practical reasons. Also, their concerns may call for expertise that is traditionally not well represented in the water sector." (interview)

Despite engagement being potentially biased and even partial, it should not be forgotten that it can not only help communities reduce risks but also improve resilience toward natural and manmade disasters. This will require not only that a structured and transparent strategy is applied to support engagement and a continuous dialogue with stakeholders, but also that project managers and practitioners react and adjust according to received input [Bagett et al. 2006; Johnston and Soulsby 2006; Hare and Pahl Wostl 2002; Wattage and Mardle 2005]. Stakeholder participation should be a two-way process. In such cases, if employed correctly, engaging stakeholders and communities can greatly contribute to the successful sharing of limited natural resources through ensuring discussions, learning, and a certain degree of agreement in connection to its use and management [Sadoff and Grey 2002; Failing et al. 2004].

Case 2. The Lake Chad Crisis

"It will be a puddle. You'll get crops and drinking water out of it, but you'll have no ecosystem left to speak of" [Coe and Foley 2001].

This case illuminates key areas of concern and describes the central argument—the case for enhanced community and stakeholder participation in water and basin

governance in order to reduce poverty and vulnerability to disasters. Issues include the following:

1. Need for attention to formal and informal education and identifying strategies nationally to scale up the benefits of the cross sector benefits of such strategies in regional poverty reduction, conservation, and development policies.
2. Need for strategies for local innovation and knowledge inputs in regional ecosystem policy development, as well as strengthening institutions to do so.
3. Need for real community and stakeholder participation and the development of platforms for dialogue, resource, and knowledge exchanges and joint strategy development in lake and basin governance.

Lake Chad is disappearing for two reasons: (1) natural (increasing drought and climatic change conditions) and (2) human factors (lack of regulation and massive bad irrigation practices). It is estimated that about one-third of the stream flow today is being diverted from the Chari River before its flow even reaches Lake Chad. Between 1983 and 1994, irrigation water use increased fourfold [Glantz 2004]. About 50% of the decrease in the lake's size since the 1960s is attributed to human water use, with the remainder attributed to shifting climate patterns [Davit 2001; Coe and Foley 2001].

In response to these changes, on May 22, 1964, the Lake Chad River Basin Commission (LCBC) was established by the Fort Lamy (N'djamena) Convention and Statutes by the governments of Cameroon, Chad, Niger, and Nigeria. In 1994, the Central African Republic was admitted as the fifth signatory. Sudan was admitted during the tenth Head of State summit held on July 28, 2000, increasing the LCBC jurisdiction from 966,955 square kilometers to 1,035,000 square kilometers [Lake Chad Basin Commission 2003]. The Fort Lamy Convention recognizes the sovereign rights of each member state over basin water resources within its own territory but forbids unilateral exploitation of lake water where such use detracts from the interests of other states. Member states are required to abstain from measures likely to alter the water budget, water quality, integrated water and resources management health, or water access by other member states. The convention recognizes the right of member states to plan projects within the conventional basin in consultation with the LCBC.

Limitations

Despite the broad mandate of LCBC, which includes transboundary water and land, economic integration, and peace and security issues, the existence of institutional legal frameworks has not translated into effective action. For example, years after the creation of the LCBC, national water policies within member states still remain deficient or nonexistent. The absence of regional and national standards or

guidelines to govern the monitoring of water quality, quantity, and cost-sharing mechanisms has led to continued environmental degradation within the basin. As a result, LCBC's efforts at regional water resource management have failed. Its failure to take action to achieve active community participation and wide stakeholder consensus have not provided any results.

Significant operational issues at the LCBC have arisen from the overall fragmentation of scientific effort, responsibility, and authority, leading to fiduciary concerns, the substantive lack of accountability, and a weakening of capacities at all levels. As a consequence, the organization's ability to function on a day-to-day basis is impeded.

Timeline for Reform

It is obvious that the current system is failing: lake and basin governance is lost; management is faulty; Lake Chad is endangered; and time and opportunities are running short. The next question is of imminent importance: What is the timeline for reform? The management of Lake Chad is already having a negative impact on every life system being sustained by the lake. The estimated 22 million people who depend on the lake and its resources for their livelihoods are at serious risk. It is already possible to observe the consequence of expanding extreme poverty in a troubled region already featuring the driest regions (Eastern Chad, Northern CAR, and Western Sudan), which will intensify the ongoing conflict and increase social disruption. Estimates of a worst-case scenario in which Lake Chad dries up with no alternative livelihoods or social safety net in place are dire.

Principal Barriers to Knowledge Diffusion and Technological Innovation and the Need for Strengthening Community Involvement

The Lake Chad River Basin Commission rules and protocols were built on age-old conventions that are not necessarily relevant for the current ecosystem and the adaptive management needs of the lake and river basin. However, before initiating reforms at LCBC, governments must assess the broader economic environment including the potential for regional development, infrastructure, technology, innovation, and basic human capital stocks. Overcoming national and regional structural barriers may not be possible under the auspices of a LCBC restoration project, as macroeconomic structural economic adjustments are called for to generate a "fundamental shift in the business as usual model of governments" to achieve regional economic development [Murenzi and Hughes 2005, p. 43]. In addition, constant political instability perpetually undermines regional economic progress and stunts the development of national and local learning innovation systems. However, at the institutional level, actions can be taken in order to create a Lake

Chad Basin Commission Learning System. This would involve more investment in knowledge creation, knowledge transfer, and a governance structure suited to ecosystem management and innovation approach [Murenzi and Hughes 2005, pp. 43, 52].

The following sections also illuminate the problem and provide concrete suggestions concerning the preconditions needed for an effective learning system to evolve (regional integration, infrastructure, and nonformal and formal education).

Regional Development (Macroeconomic Policy)

Romaine Murenzi and Mike Hughes believe that the recent African effort at regional economic development reflects recognition of the importance of science and technology in development [2005, p. 51]. They suggest that new efforts to import technologies must be combined with homegrown institutional innovation in order for the development to be successful. In addition, they posit that new strategies for international cooperation in Africa consider major trends such as globalization and regional integration initiatives [Murenzi and Hughes 2005, pp. 48–59]. For example, they state, "World Markets are a source of technology and capital; it would be silly for developing countries not to exploit these opportunities. But globalization is not a short cut to development. Successful development strategies have always required a judicious blend of imported practices with domestic institutional innovation" [Murenzi and Hughes 2005, p. 51].

Infrastructure (Technological Learning)

Furthermore, Murenzi and Hughes suggest that the ability of infrastructure development to diffuse technical skills into the economy has been overlooked. In connection to this position, they argue that Rwanda's growth policies since 1997 stipulate that new regional infrastructure projects should be tailored to the transfer of skills and facilitation of the learning process in order to be effective [Murenzi and Hughes 2005, p. 62], which, according to Ridley and Lee [2005], support that "the absence of infrastructure services is a serious problem hindering efforts to develop Africa."

Juma [2005] posits that the technological learning process can provide organizations with an opportunity to acquire and diffuse new knowledge and skills. During a presentation to the leaders at the African Development Bank in April of 2006, he stated, "Development and infrastructure literature often overlooks infrastructure's dynamic nature. Every stage of an infrastructure project, from planning and design through to construction and operation, involves the application of a wide range of technologies and associated institutional and management arrangements" [Juma 2006b]. Thus, infrastructure constitutes a major part of the development of a dynamic learning system.

Education (Human Development Policy)

Oyelaran-Oyeyinka and Barclay [2003] argue that the base of human capital and the institutions inherited by African states have set the tone for the development in national systems of innovation. They consider the African development context as a "non-dynamic system of innovation" and suggest that limited human capital development explains the relatively difficult processes of implementing science and technology institutions on the continent. They suggest that in order to be effective, national and international innovation systems must include important factors such as basic education, economic growth, and industrialization.

In 1981, Easterlin expanded on this argument [Oyelaran-Oyeyinka and Barclay 2003]. He stated, "There is a direct correlation between schooling of the relevant context and countries' ability to master new technologies." Oyelaran-Oyeyinka and Barclay [2003] elaborated, stating that "the combined rates of technological and human capital (transmitted through educational attainment) are connected, and the existing supply of human capital such as a mixture of skills at the onset of the industrialization process is an important prerequisite for economic growth." When considering the elements necessary for progress through the lens of the disappearing Lake Chad situation, one question raised is whether existing national structures of innovation and human capital base are sufficient to provide capacity to support a standalone model institution aimed at providing knowledge services to achieve integrated water resource management.

Multifaceted Cooperation

Cooperation with donors also represents an issue that has presented unique challenges for organization of good regional ecosystem governance structures in the Basin area, especially as donor interest has been waning in recent years. This was not always the case. According to the UNDP report on restructuring [1988], 1964–1989 was a period characterized by donor vitality, an organizational vision, and positive cooperation. Donor support, particularly from UNDP, was significant and included the establishment of LCBC and maintenance of many of its activities. Today, with a growing international interest in climate change and international waters, the international community has started to work with organizations such as LCBC again. However, incumbency and related poor management within the UN dynamic and older governance structures. LCBC's lack of internal technical and administrative capacity, as well as staff incentives to embark on a complex regional work plan and, finally, the poor stakeholder participation strategy threaten the renewed relationships.

Within this context, the review of institutional documentation revealed that donors tended, in the past, to grant assistance in accordance with their own mandates and often included a preset criterion that has changed depending on the development context. Dealing with regional problems of the Lake Chad Basin, the

reliance on donor-led planning support has ultimately failed. It will be vital to learn from these experiences. While donors have practical interests in the organization goals, they should not be relied on for follow-through after the initial input had been made. As such, regional structures such as LCBC must plan and supplement their activities with donor inputs only after considering where donor criteria fit within their own strategic planning mandate.

Building Community Resilience and Ensuring Food and Water Security for All

Within the context of participation, the LCBC is responsible for a diverse set of stakeholders. However, stakeholder participation in LCBC activities varies according to each different stakeholder, individual, or organizational mandate. Engagement usually occurs through informal arrangements and on an ad-hoc basis, depending on the nature of the project in question.

Moreover, LCBC is characterized by the paradox of being an internationally recognized organization that is virtually invisible inside its own jurisdiction. This is, in part, attributed to the absence of two critical stakeholder groups in the Basin governance process, namely, subregional planners and local end-users.

Benefits of Expanded Stakeholder Participation

The benefits of involving stakeholders especially those at the community level in the regional policy and problem-solving processes are as follows: (1) the process appears more democratic and the engagement of stakeholders may legitimize the final policy; (2) stakeholder groups (particularly industry and NGOs) may have additional data that may inform policy deliberation; (3) stakeholders bring diverse technical expertise; and (4) stakeholders bring diverse viewpoints.

The lack of intra- and international coordination between the LCBC and various tiers of government, the private sector, and civil society severely inhibits good regional planning, policy construction, and relevant local actions. The LCBC does, however, have the opportunity to build upon the output from years of informal stakeholder activity that has contributed to the identification of key Basin management issues. These informal discussions can provide the foundation for a more formal set of decentralized structures that can govern the regional planning mandate and, thereby, influence potential outcomes. The GEF Project is in the process of formalizing many of these relationships, as these new structures need to be integrated into the existing LCBC structure in order to be effective.

Barriers to effective, systematic stakeholder participation in LCBC activities include the following [LCBC 2005]:

■ Inconsistent interregional coordination
■ Lack of goals and benchmarks

- Lack of an implementation plan
- Lack of strategic management planning
- Poor communication networks
- Lack of detail-orientation
- Lack of reliable data related to monitoring and assessment
- Disparities in resources
- Complex and highly technical scientific data and geographic data requiring expensive proprietary software
- Lack of ease finding a common place and time for discussion and negotiation

With this in mind, LCBC management must identify the key stakeholders and the nature of their engagement in organizational activities. Participation should be planned in relation to the LCBC mandate and outcome goals, and monitored against a strategic LCBC annual work plan. LCBC must, therefore, work in conjunction with its stakeholders and clearly define the nature of these relationships (possible examples include LCBC–members, employer–employee, constituent–beneficiary, and professional–donor association, LCBC–end-user).

In relation to this, national authorities need to evolve mechanisms necessary for effective coordination and consultation with stakeholders to ensure awareness of and involvement in policy formulation, implementation, monitoring, and decision-making. Environmental education is also critical.

Stakeholders interviewed confirmed there is a lack of regional and local stakeholder participation in LCBC decision-making [Hodge 2006]. During a consultation with Lake and Basin stakeholders held in Cameroon, the group highlighted Basin management and governance concerns:

- General lack of knowledge concerning technical LCBC activities. No publications or information updates were available.
- Synergistic networks exist but are very task-related and usually unsubstantiated.
- Lack of a formal network to discuss Basin issues.
- Lack of communications and IT infrastructure that inhibit email correspondence.
- Data monitoring and assessment deficiencies.

A way to facilitate these important stakeholder linkages at the local administrative levels can be through, for instance, a memoranda of understanding (MoU). This would broaden the knowledge base of LCBC, provide better communication flow, and, ultimately, enhance cooperation. There are precedents (for example, the Mekong River Basin Commission in Thailand) that demonstrate that river basin working groups can function effectively when a bottom-up development process is incorporated.

Proposed Evolutions

Vision—Regional Integrated Water Resources Management

The current LCBC 2025 Vision that has been approved by the Member States,* is summed up as follows:

> . . . land, water and all natural resources are conserved, sustainable exploited, managed in an integrated manner and shared equitably, in order not only to eradicate poverty and improve living standard of the people in the Lake Chad Basin, but also to ensure peace, security, cooperation and sound economic developments of the region."†

This vision represents a significant departure from LCBC's original mission, which was to "develop general regulations, ensure effective application of regulations, coordinate research activities of Member States, study projects prepared by Member States, recommend plans for the implementation of surveys and other projects in the Lake Chad Basin, and, generally, maintain liaison among the Member States [Odada, Oyebande, and Oguntola 2005].

During the tenth summit meeting held in July 2000, N'djamena, the LCBC members declared Lake Chad a wetland of international importance (Chad Wet). This sparked increased awareness and a conscious revision of the importance of integrating the principles of conservation and sustainable management of the hydrographic Basin. The original mandate focuses on political and economic development and Integrated Water Resources Management (IWRM), emphasizing the regulatory function and placing less emphasis on its regional function. The current orientation, therefore, is a conscious focus on the regional basin management function.

A set of unifying policy-related outcome goals and an overall comprehensive LCBC vision statement are urgently needed. There have been several activities attesting to a new focus and vision that need consolidation with achievable goals. For example, recently the RAMSAR Secretariat and LCBC enacted a MoU‡ during

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* Managing the Water Resources of the Lake Chad Basin, Power Point Presentation, Muhammad Sani Adamu–Executive Secretary LCBC, GTZ Workshop, LCBC N'djamena, August 31, 2005.

† Editorial of the LCBC Executive Secretary, Lake Chad Bulletin, No. 0. November 2001.

‡ A Memorandum of Cooperation in November 2002 between the Bureau for the Convention on Wetlands in accordance with the Ramsar Convention of 1971 and the LCBC spelled out the following objectives:

- Reinforce the role of wetland integrated water resources management in sustainable development
- Reinforce organizational partnerships at the Basin and national levels among all stakeholders, governmental entities, intergovernmental organizations (IGOs), nongovernmental organizations (NGOs), and other stakeholders concerned with conservation and sustainable wetland use
- Establish coherent national and regional networks of Ramsar sites at the Basin level as the basis for their sustainable management
- Foster innovative approaches to transboundary wetland management in the Lake Chad Basin by promoting partnerships between stakeholders, conventions (CBC, UNCCD, UNFCCC), etc.

the second World Water Forum in 2000 (UNEP/DEWA) that highlighted a number of important issues identified within the Lake Chad Basin and presented three key objectives:

1. Maintenance of Lake Chad and other wetlands in the region at sustainable levels to provide economic security, sustainable biodiversity, and the equitable use of aquatic resources of the Basin for the alleviation of poverty
2. Acceptance of responsibility for freshwater, IWRM, and biodiversity conservation and integrated River Basin management by regional and national authorities
3. Equitable access by member states to safe and adequate water resources in order to meet their needs and rights

Partnership Strategy

The ability to build coalitions is an essential component in order to facilitate regional IWRM. In this regard, there is a need for a comprehensive partnership strategy (including all relevant stakeholders, scientific and academic institutions, and donors). The role of informal agreements cannot be underestimated in order to define roles and responsibilities of the different stakeholders that have a vested interest in the management of the Basins resources.

Among the core values to target are the following:

- Development of collaborative opportunities
- Facilitate access to external expertise
- Share cross-organizational best practices
- Better serve clients and partners
- Increase visibility of LCBC as a best practice advisory and knowledge-based institution

Traditional assessments of partnership strategies emphasize cooperation over competition. Knowledge is sought and achieved through teaming with complementary individuals (e.g., cross-networking). Typical issues to be assessed include the following:

- As a team, how well does LCBC understand its clients?
- As a team, what value does LCBC demonstrate to the client?
- How well does LCBC use organizational knowledge to improve work efficiency?
- What contribution does the LCBC team make to the client's knowledge networks? Is knowledge management effective?
- How active is the LCBC team in the development of new services?

Other Regionally Relevant Knowledge-Based Organizations

A sustained effort should be made to establish, or reestablish, formal and informal relations with key research organizations involved with resources management in the region. LCBC should, for example, begin by conducting an institutional mapping exercise of potential partners.

For instance, two key research institutions in the Lake Chad area include the Lake Chad Research Institutes at Maiduguri (Nigeria) and N'Djamena (Chad). The Institute in Maiduguri, for example, has established 10 stations (experimental sites). These and other research institutions can be considered as potential LCBC allies or partners and properly equipped to deliver results that will lead to breakthroughs in knowledge and management practices. Another good example of a good partnership is the North East Arid Zone Development Programme (NEAZDP), which was established by the European Development Fund of the Lome Convention, to promote integrated rural development in the area north of Latitude 12°N in northeast Nigeria. It has achieved much and with its EU funding fully restored could be effectively used as a strategic partner of LCBC.

Partnership Strategy (Getting to Know the Clients)

As mentioned earlier, regional institutions such as LCBC must develop a firm partnership strategy that will delineate donor institution relationships in a manner conducive to LCBC outcome goals. These revamped relationships must be characterized by defining strategic partnership strategies. For this reason, a partnership strategy between LCBC and its primary stakeholders must be developed internally. The development of key relationships has a strategic intent and must therefore be properly resourced. Since the principles of knowledge networking, for example, can support the sharing of comparative experiences that can be used to develop an LCBC relationship agenda and related set of actions.

Such a strategy will (1) support enhanced understanding of member states internal agendas; (2) develop knowledge of client (government) profiles; (3) identify strategies designed to strengthen relationships with existing or build relationships with new partners; and (4) share comparative experiences and identify best practices for influencing partners.

Building relationships with these clients can be facilitated by a number of activities including promoting staff exchanges between LCBC and country-sector-specific offices, establishing a regional community of practices centered around problem-solving on issues of relevance to the Basin, building a yellow pages directory of LCBC staff expertise and experience, making staff available for programming- or policy-related missions to member states, and providing the target knowledge communities with funding for workshops, research, and other local activities.

Regionally Relevant Knowledge-Based Organization

For LCBC to undergo a process of renewal (2025 Vision), the objective must be to ensure that the Secretariat has at its disposal a correct mixture of scientific and technical expertise as well as partnerships and other internal capabilities for effective problem solving and implementing regional IWRM. This will require considerable internal refocusing, reengineering, and behavioral change (management style, operational and administrative structure, work processes, budgeting, etc.). Through this process, policy capacities can be strengthened, partnerships emphasized and expanded, and LCBC staff competencies upgraded. Such changes are required in order to enhance instruments for measuring performance and to provide a platform for an expanded knowledge resource base.

Consequently, there is a pressing need for LCBC to restructure in order to become a service-oriented, professional, and streamlined regional development organization that is capable of providing policy support where and when it is most needed. LCBC must reflect a flexible management structure that facilitates this objective. In addition, the organization's transformation must entail enhancement, streamlining, and rationalization of all staff roles in order to produce a decentralized, networked, hands-on and service-delivery-oriented operation. This action would enable LCBC staff to work effectively, thereby securing future success in achieving organizational goals.

With this in mind, LCBC might need to develop a number of key service lines and tailor internal capacities to do so. For example, LCBC can adopt a strategic program approach in order to manage activities relating to key conservation and development objectives. Existing staff must be provided with the tools and management guidance to be able to perform new knowledge facilitation and partnership-development-related duties. In order to accomplish this, the organization will inevitably need enhanced technical capacities (e.g., management support and technical guidance) in the short term. Nevertheless, any measures for change will ultimately prove futile without effective management, technical support, and leadership to make the transition possible.

Stakeholder Involvement, Knowledge-Partnerships, and Organizational Structure

In order to provide more opportunities for stakeholders to participate, own, and build coping mechanisms, LCBC must develop a mechanism for gathering all stakeholder input into policy and decision-making activities. By doing so, LCBC would learn of the gaps related to the lack of stakeholder participation, particularly as achieving active and consistent stakeholder engagement is critical in terms of creating better policies and decision-making structures.

Transparent and participatory problem formulation, clarification, and linkages would help to improve understanding of the characteristics of data collection and

dissemination methods. It would serve to garner regional and local participation in LCBC's policies and planning. Consequently, it is essential that LCBC functions are updated in order to reflect the new functions implied by the 2025 Vision such as problem identification and solving approach, ability to solicit active stakeholder participation, more strategic communications, knowledge management, data collection, and methods of data analysis.

Therefore, for a management plan to be sustainable, LCBC must establish strategic partnerships with key academic and scientific institutions within member states. In order to deal with the complexity of IWRM, it is crucial to develop relations with credible scientific and academic institutions that have an interest in LCBCs mandate as this will support the technical, human resources requirement, and geopolitical issues. As an example, several regional academic and scientific institutions have professional interests in the LCBC mission and would be capable of providing support. Moreover, obtaining access to relevant scientific expertise will foster effective Basin management and enhance LCBCs credibility as a knowledge-based organization.

For this to be probable, LCBC must establish a lead scientist or a similar quality control mechanism. For example, it could revitalize the LCBC technical committee within its Department of Water and Environment. This mechanism would be responsible for reviewing LCBC policies and programs against the scientific integrity in relation to the Basin's overall management objectives. This would, in turn, support monitoring policies and decision processes in line with the IWRM approach. Especially as LCBC must maximize the use of science and technology as the basis for future planning and policy.

On the whole, the integration of science into the decision-making structures at LCBC must be the central point through which the organizational changes occur, an issue that cannot be underestimated. Appropriate scientific input, supportive technology, and infrastructure would facilitate better decisions concerning the Basin. As such, LCBC must address the blatant communication problems within the organization, and develop mechanisms that support knowledge-sharing and information flow throughout the region. By integrating this function within its organizational structures, LCBC could support and significantly improve decision-making concerning Lake Chad.

Conclusion

Although the literature on stakeholder- and community-based participation and development continues to bring in new ideas and methods for exploring development agendas, there is little evidence that one approach is better than the previous one [Herman 2005; Harmoni 2005]. As any concept evolves, debates over definitions, fundamental principles, and policy implications proceed. But, as this chapter has demonstrated, the discussion surrounding participation is not only academic

and neither is it restricted to those scientists, professionals, and policymakers who work directly with water resources management. Together with defining how we can reduce risks concerning natural and manmade disasters, as well as improving the resilience of communities, there is a parallel process of redefining the role and responsibilities of humans in nature.

In relation to this issue, the assessment of a project (or program) requires the consideration of the complete context in which it is being implemented. It is not enough to discuss the credibility of a project, policy, or program, but it also requires a joint understanding of the established objectives and the methods by which they will be achieved. This is of particular importance from a development perspective (for example, in the case of Lake Chad and the Danube region), as many of the environmental problems associated with community disaster recovery and resilience involve broader social and economic concerns.

Due to this lack of commitment and insight, there seems to be a need to develop a strategic understanding of the mechanisms required for developing consensus, capacity, and relationships within and outside projects. It is not enough to fund a diagnostic analysis and develop a strategic action plan, since that does not build capacity and resilience (stakeholders are, in this sense, one element of capacity/resilience). A potential benefit of making sure that stakeholder input is taken seriously is that it helps to stimulate adaptability and the development of local solutions. Such an approach might generate solutions that work effectively by being inclusive and innovative. It is difficult to see how resilience and recovery capacities can be effectively improved without active participation of those most directly concerned.

As stated in the Introduction, this chapter aims at addressing some of the key challenges facing the development of participation strategies. This was with the intent of discussing its relevance in terms of community-based risk reduction. An interesting context in which to put these issues in perspective can be illustrated by risk mitigation surrounding glacial lake outburst floods (GLOF). This, particularly as one of the consequences of climate change, is the continued acceleration of glacial retreat and melting—a process that results in the generation of glacial lakes and, consequently, an increase in flash floods and general flooding events. This intensification, in terms of climate variability, is having a significant impact on the lives and livelihoods of mountainous communities and also introduces new risks for downstream areas.

As in many other fields, the traditional approach toward GLOF risk mitigation has mostly been an overwhelming focus on engineering and structural measures [Lewis et al. 2009]. Such measures can, for example, involve (1) drawing or diverting water from hazardous glacial lakes; (2) generating an inventory of glacial lakes together with monitoring the formation and expansion of glacial lakes using geographic information systems (GIS). Within this framework, the challenges to structural/engineering approaches include the inaccessibility of glacial lakes, labor intensity, accidental triggering of a GLOF during preventative measures, high costs,

and limited long-term contribution to risk mitigation. It is increasingly becoming apparent that risk reduction requires a much more holistic approach—an approach that addresses all dimensions of disaster management and the engagement of all stakeholders. As such, efforts toward involving communities and local administration have not found much acceptance and are rarely practiced. Solutions have most often been limited to expert-driven input from selected technical or research institutions and organizations. As a consequence of this emphasis on engineering solutions, most past projects have engaged in very limited involvement of communities and other relevant stakeholders. As a result, insufficient consideration has been given to the following:

- Establishing an efficient, inexpensive, and straightforward community-based warning system
- Improving a community's preparedness in terms of responding to a flooding event
- Encouraging land-use planning in hazard prone areas
- Advancing and developing strategies for mitigating the impact of disasters through awareness-raising and basic risk mitigation measures

Therefore, within the context of sustainable land-use planning and IWRM, communities that are at risk could be involved through the process of conveying knowledge as to what land is available and its suitability for a given activity. This may be achieved through a process that simply asks the communities themselves where the high risk areas are and what activities need to be halted (or relocated) to reduce risks.

To present an example within the framework of community-based participation, a community's local knowledge and understanding of their environment could (in the case of GLOF) be obtained through a simple community mapping exercise. As such, the community would not only provide valuable information, but they could also help in the process of defining problems and objectives—approach that ultimately also provides a sense of ownership toward the project. The exercise should therefore consist of straightforward guidelines. For example, a sketch map prepared by the community that includes the involvement of any local institutions may be available. Their engagement should not characterize a formal planning process, but rather a simple approach. Within this context, little external support should be provided and some elements of awareness-raising and capacity-building could be incorporated into the overall process.

On the whole, to provide a sustainable solution to GLOF (or any other natural hazards), community-based mitigation and preparedness need to be part of the planning process. Local institutions, NGOs, administration, volunteers, community elders, etc. should all be involved in the process, so as to strengthen relationships and ownership of the intended measures. Moreover, the correct type of participation provides a degree of understanding (for project managers and practitioners) in

terms of how stakeholders in the given community interpret local hazards. Thus, it is essential to employ a holistic and iterative approach as well as to develop and modify applied methods to take into consideration a community's resilience needs. This would require consideration of, for example, (1) feasible actions a community can take to prepare, mitigate, and respond to flooding events; (2) sustainability of these actions at the community level; (3) acceptance by local administration and communities; (4) available expertise; (5) training and capacity-building initiatives to prepare communities and local administrations; and (6) keeping risk reduction practices evident and tangible. Achieving this development of a risk reduction strategy requires active community-based participation and commitment from local administrations as well as enabling relevant national institutions and organizations to address challenges and provide genuine input. After all, the sharing of knowledge and experiences in this regard concerning different countries, regions, and institutions can promote the development and formulation of more effective methods and risk mitigation strategies.

Lessons Learned

The focus of this chapter has been on comparing various perspectives on the use of stakeholder input and community-based participation strategies. This question has been addressed by presenting the manner in which various project managers, practitioners, and institutions (such as LCBC and ICPDR) have chosen to interpret stakeholder participation, integrate input, and engage communities. Primarily, the purpose of this has been to stimulate a discussion on the significantly diverse definitions of what constitutes a stakeholder or community and the actual relevance accorded within the context of project management. This is particularly important as the above-mentioned case studies represent a context that supports policy implementation in the field of transboundary water management. As such, an improved understanding of this environment can help decision-makers to understand and decide on objectives, policy development, implementation, and participation strategies within the context of community-based improvement of resilience and risk reduction.

- It is fundamentally important to employ a regional approach to instill an updated IWRM approach, particularly as it describes the patterns of the use of natural resources as well as provides guidance in accordance with the principles of sustainable use.
- A country acting individually cannot bring about an integrated regional approach. This requires collaboration among the affected countries and cooperation has to be present at all levels of government.
- A successful strategy to increase the extent of an effective and efficient institution must make provisions to build its capacity, to maintain an effective and efficient Secretariat, to react quickly and well to crises, and to anticipate

important issues and initiate the formulation of timely advice and recommendations for action.

- In terms of LCBC, the Commission must become product-oriented. This means focusing on the delivery of high quality, scientifically sound products that will revive donor and member state confidence and that can prove it to be a relevant and indispensable institution in the region.
- Competence is demonstrated by a commitment to a process that will ensure recruitment of the best available scientific and other talent, as well as the establishment and application of clear rules and procedures for staff.
- International donors will support institutions that are competent, effective, inclusive, efficient, and flexible.
- Effectiveness is demonstrated through provision of useful services, such as the appropriate distribution of accurate and helpful reports to stakeholder/communities and production of reports that inform the global community of the importance of the intended work/project.
- An organization's efficiency can be achieved through the development of a process that ensures a systematic, continuous, and planned review of staff structures and monitors the number of staff; ensures the delivery of high quality output for the benefit of its members, and maintains the ecological integrity of the Basin.
- In relation to appearing efficient, flexibility can help to ensure that staffing patterns are (or can be) adjusted to meet new and changing priorities. This is particularly important at the professional level so as to ensure the ability to be proactive.
- Stakeholder and community-based participation (or inclusiveness) is the key to the future success of building resilience and contributing to risk reduction toward natural and manmade disasters. Any project or program must be seen to be inclusive on the part of all the affected stakeholders in the Basin. As such, these stakeholders should include groups and individuals at international, regional, national, and community-based levels.

Policy Recommendations

- Balanced use of expert- and stakeholder-based input during project design and conceptualization. Participation is significantly easier to stimulate if the stakeholders' real-life connections to stated project objectives are concrete and tangible.
- Highlight the importance of stakeholders and community participation (in particular) in decision-making processes for disaster risk reduction.
- Promote transboundary cooperation in the management and protection of key areas such as cross-border exchanges between local organizations.

- ◼ Move problem formulation from strictly technical concerns into the area of social orientation. This should not mean that the advantages associated with technical aspects of project development are lost.
- ◼ Develop clear guidelines to appraise the moral implications of project objectives. To address these issues, project managers should examine the moral dimensions of problem formulation, systematically represent stakeholders, engage in critical self-reflection to avoid cognitive biases, and challenge current problem assumptions.

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Acronyms

CEP	Caspian Environment Programme
EU	European Union
GEF	Global Environment Facility
GIS	Geographic Information Systems
GLOF	Glacial Lake Outburst Flood
ICPDR	International Commission on the Protection of the Danube River
IIASA	International Institute for Applied Systems Analysis
IWRM	Integrated Water Resources Management
LCBC	Lake Chad River Basin Commission
MoU	Memoranda of Understanding
NEAz DP	North East Arid Zone Development Programme
NGO	Nongovernmental Organization
REC	Regional Environmental Centre for Central and Eastern Europe
SAP	Strategic Action Plan
TDA	Transboundary Diagnostic Assessment
UNDP	United Nations Development Programme
WFD	EU Water Framework Directive
WWF	World Wildlife Foundation

Appendix 6.1 Defining Terminology and Concepts

Many researchers still attempt to extrapolate individual elements from context-specific projects to a much larger stage. But as environmental initiatives are increasingly interdisciplinary, ecological and social systems are becoming more and more inseparable. As a result, even with clear project objectives, a difference in understanding relevant concepts may generate disagreement not only during implementation but also influence the evaluation process. An issue that emphasizes not only the impact the evaluator's personal and professional background may have but also the impact from other spheres of interest.

This appendix will aim to provide a generic definition of some key concepts that have been employed throughout this chapter.

Ecosystem Management

The development of ecosystem management is a response to the deepening global biodiversity crisis. As such, it is an approach to natural resource management, which aims to sustain ecosystems so as to meet both ecological and human needs. In essence, it aspires to maintain and/or restore the function, composition, structure, and services of natural as well as modified ecosystems under the basis of sustainable development. It

should represent an adaptive, iterative, and participatory vision of a desired future state that integrates ecological, socioeconomic, and institutional perspectives, applied within a geographic framework and defined primarily by natural ecological boundaries.

Integrated Water Resource Management

Integrated Water Resource Management (IWRM) is an approach to resource management and decision-making that considers multiple perspectives and viewpoints on how water should be managed. In essence, "IWRM is defined as a process that promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems" (taken from Global Water Partnership). Hence, IWRM uses both structural and nonstructural measures to control natural and human-made water resources systems. In contrast to more traditional and sectoral approaches, IWRM provides a more holistic and interdisciplinary approach to managing all factors that affect water resources.

Stakeholder Participation and Adaptation

A general definition for public and stakeholder participation can be defined as a project element that (1) analyzes public and stakeholder interests; (2) helps to plan and provide input during complex decision-making situations; and (3) as an integrated part of project and conflict prevention/management. Participation should, if genuinely employed, represent a set of tools that is able to define dynamic relationships between stakeholders and the public. This, particularly in connection to project problem definitions, objectives, and boundaries, determines an organization's potential to influence stakeholders; define stakeholder attributes, social and cultural context; actively seek out those who will normally not be able to become involved in a stakeholder process.

Transboundary Cooperation and Sharing Water

Achieving a balance between the conservation and development of natural resources represents one of the key challenges facing societies today. This problem becomes more complex as resources (in particular water) are most often shared by more than one community or even countries. Cooperation across boundaries and borders is of key importance, a context within which shared water resources require a mechanism to become more efficient and productive. Thus, transboundary water cooperation should operate within a wide range of fields, such as crisis and conflict prevention/management, poverty reduction, and resource protection. With water resource protection in mind, transboundary cooperation should be concerned with

the sustainable protection of water resources as well as the protection and viability of biodiversity, ecological integrity, and surrounding ecosystems.

Community-Based Disaster Risk Reduction

The community is central to supporting government planning and projects focusing on benefiting urban and rural communities living with hardship. As such, the aim of community-based disaster risk reduction is to empower resource-strapped communities to cope and prepare for increasing disaster events in a sustainable manner. By, for example, developing local risk identification and planning methodology that links to planning functions, a community-based development project can (1) support any national development strategy; and (2) reduce risk for vulnerable groups. In this context, community-based disaster risk reduction should serve as the main tool for the strategy and policy formulations in relation to disaster risk reduction, resilience, and recovery.

Relevance of Defining General Terminology and Concepts

Wise decision-making concerning the management of water resources requires knowledge and experience from different disciplines to identify alternatives for action as well as to assess their effects. For example, engineering knowledge might focus on infrastructure development, while a social scientist might focus on human development issues.

As the water sector is becoming increasingly interdisciplinary, project managers need to be able to comprehend and utilize many disciplines. Moreover, there needs to be a joint understanding concerning the available methodological approaches, terminology, and concepts. Particularly, as complex problems within water resources management requires the identification of alternatives as well as the assessment of the various impacts both within the sphere of human and environmental interests.