

Research, part of a Special Feature on [Scale and Cross-scale Dynamics](#)

The Politics of Scale, Position, and Place in the Governance of Water Resources in the Mekong Region

[Louis Lebel](#)¹, [Po Garden](#)¹, and [Masao Imamura](#)¹

ABSTRACT. The appropriate scales for science, management, and decision making cannot be unambiguously derived from physical characteristics of water resources. Scales are a joint product of social and biophysical processes. The politics-of-scale metaphor has been helpful in drawing attention to the ways in which scale choices are constrained overtly by politics, and more subtly by choices of technologies, institutional designs, and measurements. In doing so, however, the scale metaphor has been stretched to cover a lot of different spatial relationships. In this paper, we argue that there are benefits to understanding—and actions to distinguish—issues of scale from those of place and position. We illustrate our arguments with examples from the governance of water resources in the Mekong region, where key scientific information is often limited to a few sources. Acknowledging how actors' interests fit along various spatial, temporal, jurisdictional, and other social scales helps make the case for innovative and more inclusive means for bringing multi-level interests to a common forum. Deliberation can provide a check on the extent of shared understanding and key uncertainties.

Key Words: *governance; institutions; knowledge; Mekong; politics; scale; science; water resources*

INTRODUCTION

Over the past decade, there has been a burgeoning literature unpacking the conventional belief that spatial scales are somehow given. Political geographers have documented for diverse situations how different social actors constrain, create, and shift scales and levels (Cash et al. in preparation) to serve their own interests (Swyngedouw 1997a, b). Actors can change power and authority by working at different spatial levels. They can alter access to resources, and the decision-making processes with respect to those resources. Scale choices can be a means of inclusion or exclusion. Making an analysis at a particular level may in itself be an expression of power (Swyngedouw 1997b). Environmental assessments, for example, are subject to biases arising from choice of scales (Lebel 2005). Actors help produce scales through their activities, and scales, in turn, constrain and guide these activities by providing (or taking away) resources (Williams 1999). Scale is shaped by the understanding of

actors, and is likely to be an on-going, dynamic, economic and political process (Delaney and Leitner 1997).

In a process aptly labeled “state simplification” (Scott 1998), states first appeal to wider interests as they go about simplifying diverse local systems, and then use the newly unified systems to rationalize development planning and environmental management. People, institutions, and landscapes are made to fit levels and scales in the states' systems of accounting and monitoring. Local-level knowledge and institutions are seen as local in scope, relevance, and power, whereas the rules and knowledge of the state have much bigger scope and significance. The capacity of states to circumscribe how scale is represented—whether through policies, laws, or media campaigns, and, if necessary, reinforced through threats and exercise of force—has most of the time far exceeded those of other actors working at more local levels. This capacity is further reinforced by state control of data gathering, analysis, and dissemination. Higher levels win, and

¹USER, Chiang Mai University

winning shifts values more and more in the direction of the higher, state-like levels (Morrill 1999). The greater power of larger places and higher levels has several underlying reasons, including: the dependence of local areas on other places; the greater mobilization capacity of interest groups at higher levels; the heterogeneity of interests and attitudes across local areas; and the dominance of national mass media by higher levels (Morrill 1999).

Power is reflected in, and reproduced by, the capacity to control and capture resources from different levels. The scale (and levels) at which a problem is experienced, analyzed, and discussed, or “scale of meaning,” may not correspond to the scale of the decision-making bodies (Towers 2000). One of the objectives of intervention may, therefore, be enabling the “scale capabilities” of the less powerful (Rankin 2003). The ability to shift across levels and scales is often important to social movements (Williams 1999). The capacity to make use of scale typically varies greatly among stakeholders (Swyngedouw 1997b). Actors will often, therefore, have to behave strategically to take advantage of alternative scales of regulation and dependencies (Cox 1998). Empowerment may necessitate acquiring the capacity to work across multiple scales. There is often a large gap between small geographical areas where environmental and social injustices take place and the larger administrative or jurisdictional levels where they can be addressed politically (Williams 1999).

The politics-of-scale metaphor has been stretched to cover a lot of different relationships. In this paper, we use this metaphor to refer to the situations where different actors contest the spatial extent and resolution of information and decisions, and contrast this with the politics of place and position (see Fig. 1). The “politics of position” refers to politics among locations that depend on their relative physical position, for example, between upstream and downstream water users or those on different banks of a river. The “politics of place” refers to the unfolding of power relations among stakeholders that arise because of the special characteristics of the places interacting above and beyond those arising from levels or position.

In this paper, we illustrate these three kinds of politics—and how they are inter-related—with examples from the governance of water resources in the Mekong region. The paper is organized into four main parts. The first introduces the main basins

in the region and their development histories. The second illustrates the ways the politics of scale, place, and position have unfolded around water issues in the Mekong Region. The third considers some institutional mechanisms and actor strategies that help explain why cross-level and cross-scale dynamics are a critical feature of politics in this region. The final part reflects on the value and limitations of the distinctions drawn between scale, place, and position, and what they imply for understanding and actions to enhance water governance in the Mekong region.

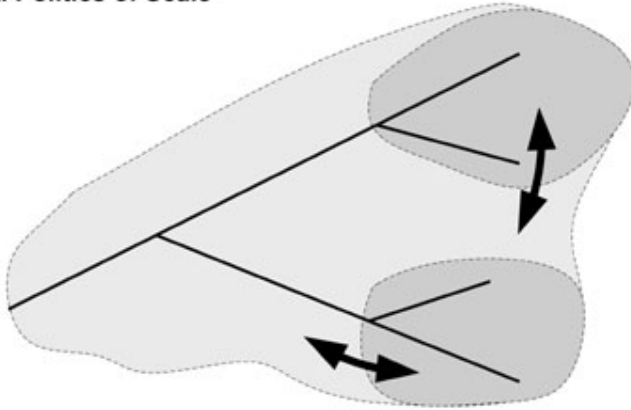
WATER IN THE MEKONG REGION

The Mekong region is taken here to cover Myanmar (formerly Burma), Thailand, Lao PDR, Vietnam, Cambodia, and those parts of China, primarily in Yunnan province, through which the upper reaches of the main rivers in the region pass. Therefore, the major rivers of interest are, from west to east, the Irrawaddy, Nu-Salween, Ping-Chao Phraya, Lancang-Mekong, and Yuan-Hong (or Red) (Fig. 2). Fish and other aquatic organisms have evolved life cycles and migration patterns that are synchronized with the predictable seasonality of river flows in the region (Dudgeon 2003). The cultural practices and livelihoods of rice farmers and fishers, in turn, are often tuned to seasonal flood regimes and associated resource dynamics.

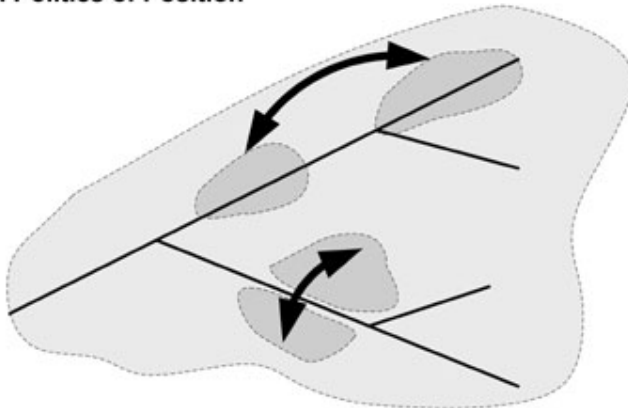
For a variety of political and biophysical reasons, water resources in the Mekong, Irrawaddy, and Salween basins have remained relatively free of large infrastructure, such as dams, river barrages and diversion schemes (Kaosa-ard and Dore 2003, The Economist 2004). Tension and conflict between first colonial and then cold-war powers have kept infrastructure investments modest and restricted to easily extracted resources. Difficult terrain and river morphologies made both overland journeys and river navigation slow, and engineering challenges large. The Thai-Lao friendship bridge between Nong Khai and Vientiane, which opened in 1994, was only the second bridge across the mainstream of the Mekong River and the first in the lower part of the basin. The first mainstream dam on the Mekong River, for example, at Manwan in China was not completed until 1993 (Economy 2004b). The mainstream of the Salween, the second largest river in the region, still remains un-dammed, although there are numerous hydropower plans. The flows of the Ping-Chao Phraya in Thailand and Red

Fig. 1. A schematic representation of the politics of scale, position, and place around regional water resources. Dark thick arrows represent political relationships (e.g., contests, conflicts, negotiations) between different area (shaded). Solid lines represent rivers and the light-shaded area represents the river basin.

A. Politics of Scale



B. Politics of Position



C. Politics of Place

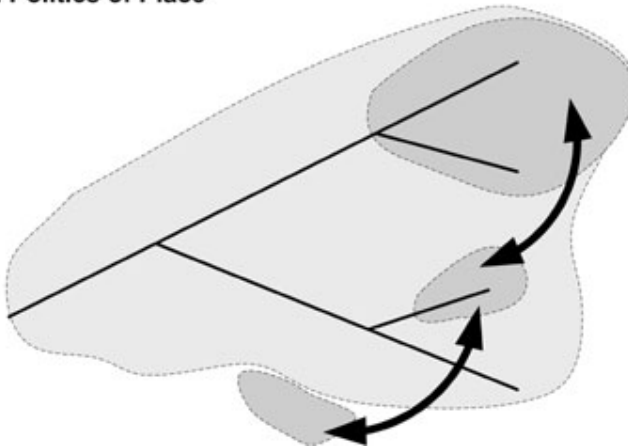
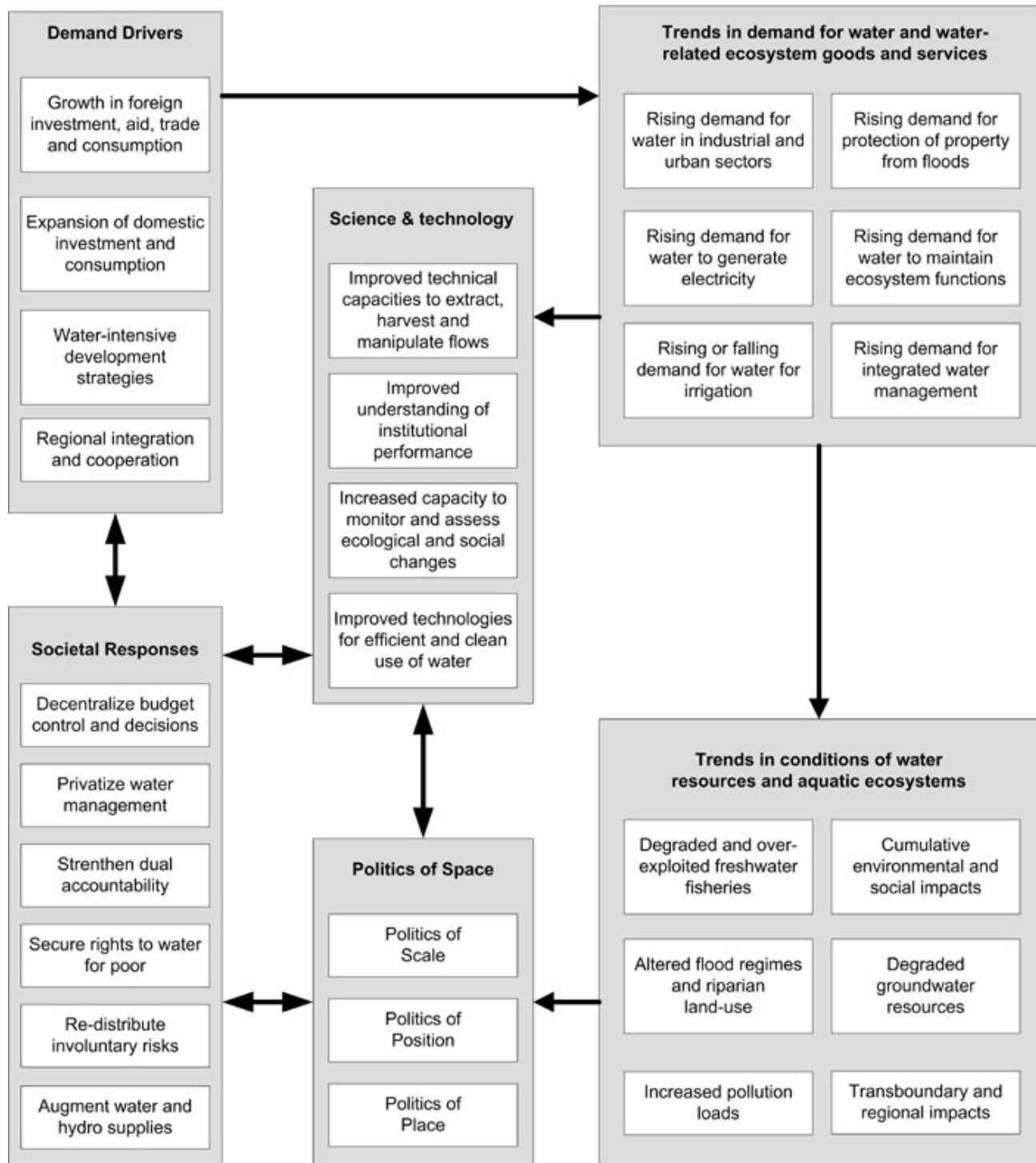


Fig. 2. The main rivers and national boundaries of the Mekong region.



Source: United Nations map number 4112, Revised January 2004.

Fig. 3. A conceptual model of some of the main dynamic processes driving water and water-related resource politics in the Mekong region.



in Vietnam have been altered a lot more, both historically with major irrigation canals or dykes, and more recently with larger dams for hydropower generation (Molle and Keawkulaya 2000).

Looking to the future, the drivers for increasing water demand in the coming decades are strong (Fig. 3). States face rising demands for water to generate electricity, to supply irrigation systems, and to service new urban and industrial areas (Chenoweth et al. 2001, Kaosa-ard and Dore 2003). There are also increasingly strident demands for environmental flows to protect fisheries and aquatic environments (Fig. 3). At the same time, efforts to maintain water quality and protect aquatic and floodplain ecosystems have become increasingly difficult (Dudgeon 2000, Economy 2004b).

China's huge economy will require a lot of energy, and some of this is going to come from hydropower in the upper reaches of rivers that flow through the other Mekong countries (Dore and Yu 2004). Thailand and Vietnam will also need more electricity. Agricultural production in Lao PDR, Cambodia, and Myanmar would increase from intensification of cultivation made possible by irrigation.

Economic and political integration also means that key drivers and associated policy levers are increasingly multi-level and beyond the control of individual governments (Fig. 3). Mechanisms for international cooperation and negotiation, however, remain partial and weak. The Mekong River Commission (MRC) is ineffectual and often sidelined by its own member states. For the Salween river basin, there is still no organization for facilitating international cooperation. The ensuing spatial politics over water are likely to grow more intense and create demands for new institutional mechanisms to negotiate, legitimize, and secure competing claims to water and the sharing of involuntary risks imposed by each other's development strategies.

POLITICS OF SPACE

Scale

A common justification for ceding water resource decision making to national-level agencies is that centralized coordination, command, and control is

needed to ensure supply and fair allocation. Local management, it is argued, is too complex and prone to vested interests to be effective in all but the finest-scale operations, for example, maintaining canals and weirs, or micro-allocation among fields. Smaller governance units are less accountable. The appropriate levels are, therefore, mostly national or large administrative areas that may not even match major river basins. The bureaucracies of the state, it is argued, can then undertake planning and decision making on behalf of the public or national interest.

Conflicts over water in the Mekong region, however, are often more nuanced than a contest between monolithic state and united community interests (Hirsch 1998, Mitchell 1998). Rather, both state and local communities pursue diverse agendas (Hirsch 1997). Part of the state may support certain water uses, e.g., for industry and power generation, whereas another set of both state and non-state actors may resist or be in favor of alternative uses and arrangements. In late 2004 in China, for example, the central government suspended the building of a cascade of dams on the Nu-Salween being pursued by the Yunnan provincial government (Dore and Yu 2004, Economy 2004a) in favor of a coalition of civil society groups critical of the projects.

In the deltas and valleys with a long history of rice cultivation, access to water for irrigation is perceived as a fundamental right (Molle et al. 2001). Pre-existing community-based irrigation systems may persist within and interact with more recent state projects (Pearson 1999). In this institutional context, politics of scale are strong, and attempts to rapidly or radically restructure rights or institutional arrangements are often impossible to carry out. Instead, states move stealthily, hiding cross-scale issues, and through modernization projects, allow markets for land and labor to silently complete their goal of transforming the level of water management and governance upward. Communities and households may resist through withdrawing labor for maintenance or through using pumps and wells to, technically speaking, "steal" water they feel is theirs by right.

In the Mekong region, it is not unusual for community-based management systems for water to arise in part because of the failure of state-based arrangements. Wittayapak and Dearden's study of four community-based watershed management

regimes of differing spatial extent, ranging from 70 to more than 25 000 ha, was consistent with commons literature in finding that management of smaller watersheds with fewer users and clearer boundaries was more effective (Wittayapak and Dearden 1999). Moreover, management structures arose without a formal authorizing framework—the watersheds are legally state property, but treated by the local populations as communal property.

The success of environmental movements and continuing economic growth in Thailand led to a re-scaling of development strategies to the regional level (Hirsch 1995). Since 2004, the Thai state is once again marketing a collection of infrastructure projects under the guise of a “Thai water grid” that includes diverting substantial amounts of water from basins in Myanmar, Lao PDR, and Cambodia to Thai consumers. The re-scaling is astute. The Thais, as project beneficiaries, will all be at the end of the tap, whereas the socially and environmentally “sensitive” activities will take place beyond Thailand’s borders.

It is easier to cut trees and build dams in neighboring countries and then import electricity and timber. Thus, most of the power that would be produced by the Nam Theun 2 dam on the Mekong tributary in Laos, Jinghong dam on the mainstream of the Lancang-Mekong in Yunnan, and Tasang dam on the mainstream of the Salween in Burma is destined for export to Thailand. Électricité de France, the Huaneng Group in China, and Greater Mekong Subregion Power Public Co. Ltd, a subsidiary of MDX group of Thailand are leading investors for each of the projects, illustrating how the investment activities of large private sector actors do not fall neatly into spatial hierarchies, but more into social-network-like scales (see Fig. 1 in Cash et al. in preparation).

The Nam Theun–Hinboun Dam is a 210 MW hydropower plant located downstream of the Nam Theun 2 dam project site on the same Mekong tributary. The project was completed in 1988. Like Nam Theun 2 it is a project involving an inter-basin transfer to take advantage of height differences. Although the basin falls entirely within Lao PDR, some actors chose to frame it as a regional project, arguing that surplus generation capacity could be sold to Thailand (Hirsch 2001).

The role of international financial institutions (IFIs), such as the Asian Development Bank (ADB) and

World Bank, has been central in large-scale development of regional water resources. The World Bank has funded almost all of Thailand’s major hydropower projects in the past four decades. The guarantees by IFIs remain crucial, especially for projects in countries like Lao PDR perceived as a high economic risk for foreign investment. Commercial banks are wary of making deals with the communist regime in Lao PDR without World Bank guarantees that their loans would be repaid (The Economist 2003). The ADB, for example, stepped in to finance the above-mentioned inter-basin transfer project in central Lao PDR. The government of Laos struggled for more than a decade before it was able to convince the World Bank to provide “financial risk guarantees” for investors to build the Nam Theun 2 dam.

One of the most critical but uncertain issues within the Mekong region is what happens to social justice and sustainability when issues are re-scaled at progressively higher, regional levels (Hirsch 2001). The ADB and its Greater Mekong Sub-region (GMS) program is a good example of “resetting the spatial level” of analysis and development planning to a higher regional level beyond that of individual nation states (Asian Development Bank 2002). Since the program began in 1992, the water sector has probably been the most controversial part of its program and a frequent focus of public protests challenging “regional-level” vision with alternative local-level perspectives.

Several key Thai non-governmental organizations (NGOs) have progressed from being largely focused on a domestic viewpoint to becoming increasingly interested in voicing a regional perspective. Notable in this shift are the Southeast Asia International Rivers Network (SEARIN) and Towards Ecological Recovery and Regional Alliance (TERRA). The shift in scale carries with it risks as well. Critical civil society is at a nascent level in the countries of the region, with the exception of Thailand. Horizontal connections across nations are often nominal or ceremonial. At the same time, even efforts at civil society linkages run into trouble as uneven power relations and politics of scale unfold. For instance, at a meeting of the region’s civil society groups in Bangkok in November 2005 where a new “Mekong People’s Council” was declared, several observers commented that perspectives of the host country, Thailand, dominated.

Some of the best examples of the politics of scale as a struggle over this form of regionalization are to be found in the history of the MRC and its precursors the Mekong Committee and Interim Mekong Committee (Jacobs 2002, Dore 2003). The MRC, established in 1995 by an agreement among the four lower basin countries—Cambodia, Lao PDR, Thailand, and Vietnam—has struggled to provide a workable institutional framework for water resources development, sharing, and use. The problem is not just the absence of China and Myanmar, but also the unevenness of state-level interests and power. The boundaries of the “Mekong Basin” are regularly re-defined for convenience, leaving out, for example, tributaries so that tributary-based projects can go ahead even when they have transboundary implications.

The MRC helps coordinate a hydrological monitoring network across national agencies, and maintains various water-related and, increasingly, non water-related databases. It is strongly dependent on the support of member state agencies that have modest information-gathering capacities (Chenoweth et al. 2001), difficulties of communication, and periodic failures of trust. The outcome has often been the aggregation of information problems at larger spatial scales rather than their resolution.

In political rhetoric, water resources can be rescaled almost at will. Biophysical realities, however, put a cap on dreams of ever-expanding supplies from inter-basin diversions and new storage dams. Scaling of ecological processes makes a difference to key services like fisheries, flood protection, and water purification. Although an ecological orientation frequently results in arguments for basin-based management, deciding the appropriate levels or sub-systems may be difficult given the complexity of human interventions in water management (Sneddon 2002).

Position

The downhill flow of water creates an immediate asymmetry among potential users, with the default “first come, first served” applying at multiple levels (Fig. 1B).

In the upper parts of the Chao Phraya basin, water from the Ping River is re-distributed through a system of overlapping state-controlled and

communal irrigation projects (Pearson 1999). Politics of position play out at several different levels. In the overall scheme, water allocation is prioritized for urban Chiang Mai and the industrial estate in Lamphun Province, which lie in the middle and lower parts of the irrigation schemes on the west and east banks of the river, respectively. Concerns with poor quality of water that finally reaches industry are leading to projects for direct delivery systems that by-pass the return flows from agriculture. Such infrastructure would further privilege and secure industrial users’ water supplies. Within the Mae Taeng system on the east bank, different zones now receive very different amounts of dry-season water, with the areas immediately downstream from the city often short of water. Because of this shortage of water and an increasing shortage of labor, landowners have responded by switching from rice to longan orchards. Water theft through pumps and groundwater extraction is a common way of adjusting to an otherwise insecure supply. Within each canal, most of the allocation is left to water user groups, often building on earlier communal irrigation institutions. At this finest scale, users are often left short. Additional complexity is introduced by largely unregulated extraction of water from irrigation channels by state organizations, such as universities and military bases, as well as private golf courses, resorts, and factories.

The issue of trans-boundary impacts of water storage and diversion is diplomatically the most intense example of politics of position in the Mekong region. Not surprisingly, China with headwaters of most of the major rivers flowing through steep terrain in Yunnan province (Fig. 2) has major plans for building cascades of dams in upper reaches. It considers these projects as critical to energy security and a sovereign issue. Downstream impacts, it is argued, are either insignificant or dams would eventually prove beneficial for flood protection, navigation, and dry-season agriculture (e.g., Plinston and Daming 1999). In early 2004, various groups began blaming low and unusual fluctuations in the flow of the Mekong River on the recently completed Dachaoshan hydroelectric dam in China’s Yunnan province (Pearce 2004a). This led to an emergency meeting of the MRC and an “official request” for information on dam operations from China (Pearce 2004b).

From the perspective of Cambodia, the key issue

has remained the unacceptable risk that the cumulative impact of upstream water use or diversions in all the upstream countries on the flood regime of the Tonle Sap ecosystem may adversely affect the fisheries upon which tens of thousands of people's livelihoods depend. Freshwater flows to the Mekong delta are also important controls on the extent and strength of the seasonal influx of saline waters into the delta areas within Vietnam.

The challenge of dam projects is that those areas that benefit and those that pay are different places and people (Beekman 2002). This immediately creates the need for negotiation and compensation that is not always forthcoming easily, and hence conflict arises. Dams transform water resources, re-scaling services in a profound way, making them available to different user groups, and changing ecological processes. A process Beekman (2002) appropriately likens to the export of land and water. Unannounced water releases from the Yali Falls Dam in Vietnam into the Se San River have led to loss of life and damages to livelihoods of fishers and farmers living along the river's banks in Cambodia (Ojendal et al. 2002). The struggle of minorities to have the issue recognized (Hirsch and Wyatt 2004) is a poignant example of the politics of position.

Politics of position may sometimes lead to investment cooperation or "deals." China has maintained good relations with Myanmar, the other non-member country of the MRC. Myanmar currently receives no aid from major donors because of the dictatorship regime and human rights abuses. Today, the country's largest hydropower plants are built one after another by Chinese companies, such as Yunnan Machinery and Equipment Import and Export Corporation and China National Heavy Machinery Corporation. The projects include the 790-MW Yeywa hydropower station in Mandalay, the 280-MW Paung Laung power plant near Pyinmana, and the 400-MW Shweli power project in northern Shan State (Anon. 2005b, c). China's interest is not limited to hydropower development. In 1997, an expert study concluded the feasibility of a high quality road connection between Dehong Prefecture in Yunnan Province and Bhamo in Myanmar with a water route along the Irrawaddy on to Yangon (Bert 2004), and thus an Indian Ocean seaport.

Politics of position also arise between opposite banks (Fig. 1B). Major rivers are often borders between major jurisdictions. The Salween and

Mekong rivers, for example, form long sections of international borders. Navigation improvement projects involving blasting of rapids and removing shoals on the Lancang-Mekong, for example, rekindled debates and negotiations between Thailand and Laos over the precise demarcation of the borderline. In this instance, the MRC was sidelined while China was able to reach agreements with Thailand, Myanmar, and Laos (Dore 2003). The events also resulted in protests by groups representing downstream fisheries interests (Samabuddhi 2002). Dams too, it is recognized, will create diplomatic challenges over demarcation of national territory in the flooded areas (Techawongtham 2003).

Inter-basin diversions engineer new relations among places. Several inter-basin transfers from Mekong and Salween to augment supplies in Chao Phraya basin in Thailand have been proposed and are currently being explored (Achakulwisut 1998, TERRA 1998, Anon. 2005a). The Theun-Hinboun dam was a run-of-river structure promoted by the ADB as environmentally friendly because, for example, the reservoir basin is small. The inter-basin diversion, however, had major impacts on fisheries and associated livelihoods in both tributaries (Hirsch 2001). The altered flow regimes essentially reconfigured both the Theun-Kading and Hai-Hinboun river ecosystems. The inter-basin transfer represented the triumph of national and regional level interests over local basin interests. The downstream impacts, however, generated a new politics of position out of what had started as a politics of scale.

Place

A lot of water politics, and institutional design effort, is aimed at overturning the physical bias of gravity that favors upstream users. In many states, these efforts have been so successful that now water users in downstream regions are given preferential treatment. In Vietnam, dykes and reservoirs are managed to protect Hanoi from seasonal flooding by shunting, when necessary, flood waters into districts that historically were not flooded. Similar responses are found for the cities of Bangkok, Chiang Mai, and Hat Yai in Thailand (Lebel et al. 2005, Manuta et al. 2005). In times of shortage, on the other hand, industry and urban areas, especially the capital Bangkok, get the water and electricity they need to grow, first. Water is allocated to higher

economic value sectors first (Molle 2002). In the Chao Phraya basin, the Electricity Generating Authority of Thailand (EGAT) releases 2–8 billion m³ each dry season from the Bhumiphol and Sirikit dams for distribution by the Royal Irrigation Department to 25 “irrigation” projects. The dams also produce a small amount of electricity. “Highest” priority is given to Bangkok’s water supply, then to prevention of saline intrusion, to orchards and shrimp ponds, with inland transport and rice last. Although irrigation has the largest share on average, it still only gets what is left after other flows have been allocated, with the consequence that there are large fluctuations from year to year, and sometimes not enough water for irrigation because the irrigable land area has already extended beyond the capacity of the basin once demands from other sectors are considered. With capitals in the deltas, the politics of place (Fig. 1C) trump position.

Another form of politics of place is the symbolic use of sites of victory or unfair loss to gain leverage in new settings. For Thai activists, the construction of the Pak Mun dam against local opposition, and the state abandonment of the Nam Choan Dam project play these opposite symbolic roles. There are, however, limits to shifting politics of place from one place to another, especially across national boundaries.

The 2400-MW Son La hydroelectricity dam in Vietnam is the largest dam in mainland Southeast Asia outside China. It is designed to also supply water for irrigation in the dry season and flood protection in the rainy season. It is upstream from the existing Hoa Binh Dam on the Da branch of the Red River. Approved in December 2002, construction started after delays in 2005 and could result in displacement of more than 90 000 people predominantly from ethnic minorities. The resettlement process has been strongly contested and negotiations over compensation continue. International and domestic NGOs are supporting the process, drawing on experiences in other locations.

Finally, some of the fiercest politics of place take place within a narrow group of similar but powerful stakeholders. For example, the 2002 restructuring of the power sector in China saw the China State Power Corporation become 11 independent firms (Dore and Yu 2004). The five power-generating companies within this set received regional hydropower assets, including potential ones like the

Nu-Salween river that went to the China Huadian Corporation and the Lancang-Mekong that went to the Huaneng Group. The political repercussions are likely to unfold first as a politics of place among these large firms with close political connections and then literally cascade into a politics of position over impacts in downstream locations and nations.

National “rice bowls,” state capitals, and dam sites each have their own politics of place that transcends politics of scale and position.

STRATEGIES AND RELATIONS

In this section, we explore in more detail some of the underlying mechanisms generating the diverse pathways along which the three forms of politics of space unfold (Fig. 4). We cluster these into four main groups, recognizing that these overlap: telling stories, building alliances, deliberating, and controlling technologies.

Telling Stories

In politics, actors tell stories to forward their interests. Issues of scale, place, and position feature prominently. There are competing stories about the benefits and disasters resulting from control being vested in authorities at various levels. There are stories about places where every last drop of water is used and everyone is happy. There are stories of position about death and destruction to lowland farms and cities from the activities of upland farmers. There are stories about great victories of resistance by local communities over states and counter-stories of well-meaning officials leading poorly educated peasants out of poverty through regional development of water resources.

Stories vary greatly with respect to sources and quality of knowledge they draw upon, and need not depend on evidence-based reasoning. Hearsay, prejudice, and myths abound. Deforestation myths, in particular, have figured prominently in watershed and water resource management debates in the Mekong region (Forsyth 1998, Blaikie and Muldavin 2004). Upland cultivators are widely blamed for sedimentation, droughts, and floods in the lower reaches without much attention to details of place, scale, or plausibility of magnitude of impacts (Forsyth 1996, Laungaramsri 2000, Walker 2003). Differences in forest types and soils have

Fig. 4. Examples of analytical questions about strategic relations of actors in space.

| Spatial Politics | | | |
|-------------------------------------|--|---|--|
| Strategic relations | Scale | Position | Place |
| Telling stories about | What are the arguments made for vesting authority to manage irrigation waters at different levels? | What are the narratives around upland watershed and lowland floodplain land-use policies? | How have stories about injustice around dam construction sites affected approaches to projects? |
| Building alliances with | How are actors based at a level able to interact effectively with other levels? | How can conflicts between upstream and downstream users be resolved? | How do alliances among similar stakeholders in different places arise? |
| Deliberating over | Which responsibilities and rights for water management should be held at what level, and by whom? | What is an acceptable impact from upstream infrastructure and uses and how should it be compensated? | What priority should be given to state capitals and "rice-bowls" for dry-season water and flood protection measures? |
| Controlling technologies for | How do different ways of storing water affect the levels at which it can be controlled? | How are downstream impacts on ecosystems and people taken into account in decisions to build and operate dams ? | How do place-based technologies empower certain groups over others? |

also often been ignored (Bruijnzeel 2004). Although a substantial body of research has focused on measuring the impacts of changes in land use in upper tributary watersheds on water delivery, timing, and quality, no attention is given to issues of lowland riparian deforestation and floodplain disruption. Advocacy work by social scientists has played a significant role in the Mekong region in creating counter narratives focused on the "local" (Lebel et al. 2004).

Molle shows how several popular arguments in favor of water pricing in Thailand are based on tenuous logic, but which through repetition have come to pass as conventional wisdom (Molle 2002).

Thus, a common claim made is that farmers are inefficient users of water, and that they waste water because it is free. Here, the scale of analysis is crucial. If you look at individual farms or even state-run irrigation projects, calculated efficiencies run often as low as 30%. However, at the macro and basin scales, you will find that in the dry season overall efficiency of controlled water use is as high as 88% for the Chao Phraya Basin (Molle et al. 2001). At the larger scale, efficiency is high because much of the return flow from fields and canals is re-used downstream or sub-surface flows are recaptured by wells into shallow aquifers. Keller and colleagues in their review of integrated water resources management note that "efforts to increase

irrigation efficiency at micro-level often lead to reduced irrigation efficiency at macro-level” (Keller et al. 1996). Moreover, farmers in the lower Chao Phraya basin now need to use pumps to access water because the flows by gravity alone are not adequate. This is costly and is one of the factors already leading to more efficient use of irrigation water and substitution of wet rice cultivation (Molle 2002).

Crisis narratives (e.g., “not enough water to grow food” or “not enough energy for tomorrow” or “ecological catastrophe if dam is built”) can play an important role in triggering or further opening up space for change. Such stories may also be manufactured by authorities as a way of gaining public acceptance for what would otherwise be controversial reforms or projects. Water shortages in irrigation areas, for example, can with a little clever manipulation of areas receiving water be used to create “crises” that can then force farmers to petition for more supply infrastructure. Rolling black-outs or even the announcement of the all-time-high peak electricity demand are also a persuasive prelude to calls for more hydropower. Flood disasters can be played up to argue for more funds and budgets for flood control infrastructure. Water shortages can be manufactured. For example, at the end of a normal monsoon season in late November 2004, Thai bureaucrats and politicians began discussing “the drought” that had hit the region. Unashamedly, in the same week, they also began releasing information about new water infrastructure projects being planned to “stave off” future droughts.

The most sophisticated and ambiguous stories emerging in the Mekong region are those about integrated water resources management (Biswas et al. 2005). Integration is liberally interpreted. Integration is an argument for shifting planning and coordination upward a level (toward the state) or downward (toward communities) in co-management arrangements. For others, integration is a synonym for new infrastructure. Engineers, through diversion tunnels, canals, and pipes, can transfer large amounts of water between basins and can thus shift the feasible level of physical control.

Assessments are special kinds of stories—they are knowledge rich, and intended to represent to the public a sincere expert judgement about what is known. Comparative studies of international environmental assessments, however, suggest that

an assessment is more likely to be influential in shaping policy if all stakeholders simultaneously perceive it as legitimate, credible, and salient (Cash and Moser 2000, Social Learning Group 2001). Achieving a reasonable balance for assessments concerned with individual projects has proved difficult in the Mekong region. An impacts assessment of the Yali Falls dam on the Se San river in Vietnam, for example, was truncated to consider only the immediate downstream vicinity within Vietnam and did not consider more distant impacts in Vietnam or neighboring Cambodia (Ojendal et al. 2002), which turned out to be substantial (Hirsch and Wyatt 2004).

Arguably even more important is the assessment of the cumulative impacts of water infrastructure development in the region. Such exercises need to handle not just politics of place (between conservationists and irrigators or power generators), but also of the politics of position and scale. A technically interesting, but not influential, cumulative assessment has been completed for Nam Theun 2 (Asian Development Bank 2004). The first 5-year plan of the Mekong Committee concentrated on cooperative data gathering (Wolf 1997). This helped build legitimacy while setting precedents for cooperation. The MRC has also carried out various evaluation studies, starting with the Mekong River Basin Diagnostic Study (Mekong River Commission 1997), and in more recent times, has re-packaged state of the environment reports. Unfortunately, basic information on many key aspects of biodiversity and ecosystem functions in the major rivers of the region is poor (Dudgeon 2003), in addition to still substantial uncertainties with respect to hydrology. This undermines the credibility of assessments that take place largely behind closed doors or with limited public consultation, such as the World Bank’s preparatory work for the Mekong Water Resources Assistance Strategy.

The capacity to control and manipulate information flows—how stories are re-told—across levels and scales is critical in the politics of space, and a tool of domination of the worst kind in authoritarian states like Myanmar. Participation and formal separation of powers can help prevent actors from a single level or place unfairly dominating deliberations. Moreover, diverse participation brings in diverse knowledge needed to match the multiple levels of water resources management.

Building Alliances

Actors create and then coalesce around stories because they find their interests or values represented in them. Stories help actors identify shared interests and understandings. In the management of regional water resources, the capacity to make links with actors at other levels, both upward and downward, in management and administrative hierarchies is often critical to maintaining or strengthening power and influence. Associating with or standing against particular places is also a key stratagem. The most difficult, but ultimately the most rewarding outcome is achieved when important subsets of up- and downstream users can negotiate deals that leave them with shared controls and benefits. The building of alliances is an important strategy in the politics of place, position, and scale.

Coalitions form when they are needed, e.g., in polarized debates that are hard to win alone. The broad coalition that has been formed across different professions (journalists, NGOs, academics, lawyers, among others) over the controversial Nu-Salween cascade dam plan is a good example. The strategy of the weak at lower levels is to build coalitions with a large number of actors working at the same level so that together they can claim increased legitimacy through weight of numbers. Lao and Thai villages on opposite banks of the Mekong cooperate to voice, and sometimes address, common concerns, such as requesting Chinese ships to reduce speeds as their wakes accelerate bank erosion. Upland farmers from various ethnicities formed a network of watershed networks across northern Thailand to challenge state watershed policies (Ayudhya 1996, Laungaramsri 2002).

Links to other levels of authority were important for the protests organized under the umbrella of the Assembly of the Poor, starting out of the struggles against the Pak Mun dam in northeast Thailand in 1995, and culminating in long-term protests in Bangkok by multiple groups (Baker 2000, Missingham 2003). This is perhaps one of the more striking examples of coalitions forming across unlikely groups, with ultimately, strong support and deals even being made with the Thai Rak Thai party of Prime Minister Thaksin Shinawatra (Phongpaichit and Baker 2004). Sneddon (2002) emphasized the importance of locals linking to Bangkok-based NGOs to “jump level” and influence debate over water pollution problems in the Nam Phong river

basin. For groups seeking to resist projects with international funding, cooperation with NGOs in other countries is often critical. At the same time, national and international coalitions encounter many difficulties especially in terms of power dynamics, representation, and accountability. Local groups may be disempowered or feel marginalized when they are involved in large and sophisticated national or international campaigns.

Deliberating Alternatives

Multi-stakeholder platforms hold promise for an alternative constructive politics of scale, place, and position outside the confines of water bureaucracies and boardrooms. Platforms come in many forms, from government review committees, public hearings and dialogues through to open and free exchanges in the media. Their relationship to decision making also varies from advisory to unconnected.

In the Mekong region, poor political rights, a lack of independence in the media, and undemocratic institutions often constrain the introduction of effective platforms. Powerful actors are still able to set and shape agendas and derail processes that threaten their interests. Spatially related tactics we have observed include: 1) constraining meaningful participation to actors from a single level or place; 2) treating new projects as part, or extensions of, earlier ones; 3) introducing parts of a grand scheme (that, as a whole, would not be supported) piece by piece, in less threatening sub-projects and not revealing the full extent of the design until it is too late to retreat; 4) stacking the set of options under consideration with weakly developed or strawman level and place options; and 5) maintaining control over key decisions by embedding them in low-level operations of the bureaucracy as procedures like irrigation schedules, water operating rules, and seasonal allocation plans.

Much has been written about decentralization trends in the Mekong region. Much remains unread by its bureaucracies. Nevertheless, there is hope that innovative dialogues could bring together diverse stakeholders from different levels and in doing so help produce the kind of political institutions and norms that are the core of good governance. Sharing of knowledge and opening up of spaces for deliberation, however, need to be followed up by action at higher administrative levels, and they need

to be followed through to the point of legislation and implementation (e.g., Pichyakorn 2003).

Controlling Technologies

Technologies are a neglected aspect of spatial water politics. Water management technologies may both enhance or erode scale dependencies. Large- and small-scale hydro-electricity generation have different distributional consequences for electricity, with the latter literally empowering relatively more local actors (Bakker 1999). Irrigation devices, e.g., weirs, canals, and gates, enable control of water allocation among urban and agricultural users and between irrigation districts at least up to a certain scale (Bardhan and Dayton-Johnson 2002). They have increasingly come under control of state agencies. On the other hand, drills for making bores and electric or diesel water pumps can help individual water users get around state-controlled water infrastructure. The same is true for water-treatment facilities and the infrastructure for piped water supply for domestic consumption. The underlying rationale that says large-scale infrastructure projects are needed to secure drinking water supplies or provide electricity to rural schools or water for crops in the dry season can often be challenged by careful consideration of alternative smaller-scale technologies that remain under control of more local authorities including communities. Consider, for example, how rainwater tanks, small run-off dams, and other rain-harvesting techniques can alter water security in rural areas, or, how micro-hydro projects can provide electricity available to remote upland communities. The issue cannot be reduced to arguments about relative economic efficiency and demands for resource commodification. Resource access and control also differ, matter, and vary spatially.

Water devices and technologies vary in investment characteristics, sharing opportunities, plausible property rights, and the way benefits and risks are distributed. They are rarely neutral with respect to scale, let alone place or position.

WINDOWS OVERLOOKING THE MEKONG

Increasing interconnectedness of the economies of the Mekong region, despite the huge differences in rates and histories of economic growth, creates new

opportunities for cooperation in development of water and water-related resources at many levels and locations. The exploration and consequences of alternatives are contested. In this paper, we have shown that there is analytical value in distinguishing politics of scale, place, and position. The politics of space offer a window into the complex world of water governance in the Mekong region. Acknowledging how actors' interests may be bound to particular levels, spatial relationships, and places helps make the case for more innovative mechanisms that bring multi-level and multi-centered interests to a common forum.

Over time, the interaction of diverse, scaled interests with ecological changes that are also diverse, complex, and multi-level results in institutional arrangements that are inevitably redundant, incomplete, and only partially coordinated across levels and scales in a way that does not coherently fit any scale characterization of the world. In early 2000, Thailand had 32 specific laws related to water that were applied by 40 government agencies in nine ministries (Kaosa-ard 2001). Eliminating "redundancies" and unifying through bundling and simplification of local institutions, however, may not be the best way of securing livelihoods (Bruns and Meinzen-Dick 2003, Lebel et al. 2004). Rather than seeing an untidy structure as a problem, however, we should be open to the possibility that such arrangements are, through the interplay of institutions they induce, more resilient than counterparts that are more centrally designed according to a narrow viewpoint and scale logic (Meadowcroft 2002, Lebel et al. 2004).

New mechanisms of governance are needed that do not shirk complexity arising from cross-level and cross-scale dynamics (Sneddon et al. 2002, Young 2002). At the same time, uncertainties and complexities suggest humbleness. Interventions in the flow of rivers and their management institutions should be "safe to fail" rather than "fail safe." Interventions at a particular level or place may create unintended side-effects at other levels or places. For example, structural measures aimed at reducing risks of flood disaster may just shift those involuntary risks onto those least able to cope with them (Lebel et al. 2005, Manuta et al. 2005). Regional cooperation does not have to be just about mega-projects, but rather could start with sharing of knowledge and experience around smaller, locally tested, social and technological innovations.

Strengthening quality of water management in upper tributary watersheds and local irrigation systems and municipalities may do more for livelihood security than large and costly water infrastructure projects (Bruns and Meinzen-Dick 2003). Public trust can be built over time through small successes, where it may not come easily with the for-all-time solution. This applies not only to engineering feats but also to institutional ones.

This paper demonstrates limits to the politics-of-scale metaphor when applied to regional water resources. Some key differences and contested relations do not fit neatly into the hierarchical ordering from small to big that spatial scale thinking implies. Interests are not always closely aligned with particular levels. Politics of position have different dynamics to those of scale, although the two are often inter-related. It is tempting to view all upstream-downstream and opposite-bank relations as indicating politics of position, but this is not always the case. Place matters as well.

The era of relatively peaceful cooperation and shared economic prosperity in the Mekong region provides an international relations context in which bringing actors from multiple levels to a common forum is a possible. The key, we assert, is to shift water politics in the Mekong region from a centralized, technocratic, and coercive mode fearful of citizens and science to a more integrated and deliberative mode open to greater public participation in decision making about water projects, laws, and policies.

There are many windows opening over the great rivers of the Mekong region, from the Irrawaddy across to the Huan. How far and what different people see varies tremendously. That is why politics of place, position, and scale are each critical to water governance.

Responses to this article can be read online at:
<http://www.ecologyandsociety.org/vol10/iss2/art18/responses/>

Acknowledgments:

This working paper is based on research supported by grants from the U.S. National Oceanic and Atmospheric Administration's Office of Global Programs, the World Conservation Union, START,

and the Swedish International Development Cooperation Agency. This is contribution MWP-2005-17 to the Mekong Program on Water, Environment, and Resilience (M-POWER). This paper benefited from interactions and discussions with staff and visitors at the Unit for Social and Environmental Research. Here, we would like to especially thank John Dore, Supaporn Khrutmuang, François Molle, and Yannick Brand for sharing their knowledge about water resources management in the region. We are also grateful to Noel Rajesh and André Lebel for their editorial suggestions.

LITERATURE CITED

- Achakulwisut, A.** 1998. Many rivers to cross. *The Bangkok Post*, 30 December 1998, Bangkok, Thailand.
- Anonymous.** 2005a. Tunnel "will solve water shortage." *The Bangkok Post*, 12 June 2005, Bangkok, Thailand.
- . 2005b. Chinese companies building hydropower projects in Myanmar. *People's Daily*, 2 September 2005, Beijing, People's Republic of China.
- . 2005c. Myanmar to purchase hydropower equipment from China for nation's biggest dam. *Associated Press*, 15 July 2005, New York, New York, USA.
- Asian Development Bank.** 2002. *The first ten years of the GMS program: taking stock*. Asian Development Bank, Manila, Philippines.
- . 2004. Cumulative impact analysis and Nam Thuen 2 contributions. Asian Development Bank, Manila, Philippines.
- Ayudhya, P. N. A.** 1996. Community forestry and watershed networks in Northern Thailand. Pages 116–146 in P. Hirsch, editor. *Seeing forests for trees: environment and environmentalism in Thailand*. Silksworm Books, Chiang Mai, Thailand.
- Baker, C.** 2000. Thailand's assembly of the poor: background, drama, reaction. *South East Asia*

Research 8:5–29.

Bakker, K. 1999. The politics of hydropower: developing the Mekong. *Political Geography* 18:209–232.

Bardhan, P., and J. Dayton-Johnson. 2002. Unequal irrigators: heterogeneity and commons management in large-scale multivariate research. Pages 87–112 in E. Ostrom, T. Dietz, N. Dolsak, P. C. Stern, S. Stonich, and E. U. Weber, editors. *The drama of the commons*. National Academy Press, Washington, D.C., USA.

Beekman, G. B. 2002. Social change and water resource planning and development. *Water Resources Development* 18:183–195.

Bert, W. 2004. Burma, China and the U.S.A. *Pacific Affairs* 77:263–282.

Biswas, A. K., O. Varis, and C. Tortajada, editors. 2005. *Integrated water resources management in South and Southeast Asia*. Oxford University Press, Oxford, UK.

Blaikie, P. M., and J. S. S. Muldavin. 2004. Upstream, downstream, China, India: the politics of environment in the Himalayan region. *Annals of the Association of American Geographers* 94:520–548.

Bruijnzeel, L. A. 2004. Hydrological functions of tropical forests: not seeing the soil for the trees. *Agriculture Ecosystems and Environment* 104:185–228.

Bruns, B., and R. Meinzen-Dick. 2003. Frameworks for water rights: an overview of institutional options. In Institutional options for improving water allocation. International Working Conference on Water Rights, Hanoi, Vietnam.

Cash, D. W., and S. C. Moser. 2000. Linking global and local scales: designing dynamic assessment and management processes. *Global Environmental Change* 10:109–120.

Chenoweth, J. L., H. M. Malano, and J. F. Bird. 2001. Integrated river basin management in the multi-jurisdictional river basins: the case of the Mekong river basin. *Water Resources Development* 17:365–377.

Cox, K. R. 1998. Spaces of dependence, spaces of

engagement and the politics of scale, or: looking for local politics. *Political Geography* 17:1–23.

Delaney, D., and H. Leitner. 1997. The political construction of scale. *Political Geography* 16:93–97.

Dore, J. 2003. The governance of increasing Mekong regionalism. Pages 405–440 in M. Kaosa-ard and J. Dore, editors. *Social challenges for the Mekong Region*. White Lotus, Bangkok, Thailand.

Dore, J., and X. Yu. 2004. Yunnan hydropower expansion: update on China's energy industry reforms and the Nu, Lancang and Jinsha hydropower dams. USER Working Paper 2004-4. Unit for Social and Environmental Research, Chiang Mai University, Chiang Mai, Thailand.

Dudgeon, D. 2000. Large-scale hydrological changes in tropical asia: prospects for riverine biodiversity. *Bioscience* 50:793–806.

———. 2003. The contribution of scientific information to the conservation and management of freshwater biodiversity in tropical Asia. *Hydrobiologia* 500:295–314.

Economy, E. C. 2004a. Dammed up demands for change? *South China Morning Post*, 15 December 2004.

———. 2004b. *The river runs black: the environmental challenge to China's future*. Cornell University Press, Ithaca, New York, USA.

Forsyth, T. 1996. Science, myth and knowledge: testing Himalayan environmental degradation in Thailand. *Geoforum* 27:275–292.

———. 1998. Mountain myths revisited: integrating natural and social environmental science. *Mountain Research and Development* 18:126–139.

Hirsch, P. 1995. Thailand and the new geopolitics of Southeast Asia: resource and environmental issues. Pages 235–259 in J. Rigg, editor. *Counting the costs: economic growth and environmental change in Thailand*. Institute of Southeast Asian Studies, Singapore.

———, editor. 1997. *Seeing forests for trees: environment and environmentalism in Thailand*.

Silkworm Books, Chiang Mai, Thailand.

———. 1998. Dams, resources and the politics of environment in mainland Southeast Asia. Pages 55–70 in P. Hirsch, and C. Warren, editors. *The politics of environment in Southeast Asia: resources and resistance*. Routledge, London, UK.

———. 2001. Globalisation, regionalisation and local voices: the Asian Development Bank and rescaled politics of environment in the Mekong region. *Singapore Journal of Tropical Geography* 22:237–251.

Hirsch, P., and A. Wyatt. 2004. Negotiating local livelihoods: scales of conflict in the Se San river basin. *Asia Pacific Viewpoint* 45:51–68.

Jacobs, J. W. 2002. The Mekong River Commission: transboundary water resources planning and regional security. *The Geographical Journal* 168:354–364.

Kaosa-ard, M. 2001. *Framework for water management policy for Thailand*. Thailand Development Research Institute, Bangkok, Thailand.

Kaosa-ard, M., and J. Dore, editors. 2003. Social Challenges for the Mekong Region. White Lotus, Bangkok, Thailand.

Keller, A., J. Keller, and D. Seckler. 1996. Integrated water resources systems: theory and policy implications. Research Report No. 3. Page 15. International Water Management Institute, Colombo, Sri Lanka.

Laungaramsri, P. 2000. The ambiguity of “watershed”: the politics of people and conservation in northern Thailand. *Southern* 15:52–75.

———. 2002. Redefining nature: Karen ecological knowledge and the challenge to the modern conservation paradigm. Earthworm Books, Chennai, India.

Lebel, L. 2005. The politics of scale in environmental assessment. Chapter in F. Berkes, T. Wilbanks, and D. Capistrano, editors. *Bridging scales and epistemologies: linking local knowledge and global science in environmental assessments*. Island Press, Washington, D.C., USA. (In press.)

Lebel, L., A. Contreras, S. Pasong, and P.

Garden. 2004. Nobody knows best: alternative perspectives on forest management and governance in Southeast Asia. *International Environment Agreements: Politics, Law and Economics*. 4:111–127.

Lebel, L., J. Manuta, and S. Khрутmuang. 2005. *Risk reduction or distribution and recreation? : the politics of flood disaster management in Thailand*. USER Working Paper WP-2004-16. Unit for Social and Environmental Research, Chiang Mai University, Chiang Mai, Thailand.

Manuta, J., S. Khрутmuang, D. Huaisai, and L. Lebel. 2005. Institutionalized incapacities and practice in flood disaster management in Thailand. *Science and Culture*: in press.

Meadowcroft, J. 2002. Politics and scale: some implications for environmental governance. *Landscape and Urban Planning* 61:169–179.

Mekong River Commission (MRC). 1997. Mekong River Basin Diagnostic Study. Mekong River Commission, Bangkok, Thailand.

Missingham, B. D. 2003. The assembly of the poor in Thailand: from local struggles to national protest movement. Silkworm Books, Chiang Mai, Thailand.

Mitchell, M. 1998. The political economy of Mekong Basin development. Pages 71–89 in P. Hirsch and C. Warren, editors. *The politics of environment in Southeast Asia: resources and resistance*. Routledge, London, UK.

Molle, F. 2002. Economic tools for water demand management in Thailand: conventional wisdom and the real world. Pages 209–223 in D. Brennan, editor. *Water policy reform: lessons from Asia and Australia*. Proceedings of an International Workshop held in Bangkok, Thailand, 8–9 June 2001. Australian Centre for International Agricultural Research, Canberra, Australia.

Molle, F., C. Chompadist, T. Srijantr, and J. Keawkulaya. 2001. Dry-season water allocation and management in the Chao Phraya Delta. Kasetsart University, Bangkok, Thailand.

Molle, F., and J. Keawkulaya. 1998. Water management and agricultural change: a case study in the upper Chao Phraya delta. *Southeast Asian*

Studies 36(1):32–58.

Morrill, R. 1999. Inequalities of power, costs and benefits across geographic scales: the future uses of the Hanford reservation. *Political Geography* 18:1–23.

Ojendal, J., V. Mathur, and M. Sithirith. 2002. Environmental governance in the Mekong: hydropower site selection processes in the Se San and Sre Pok Basins. SEI/REPSI Report Series No. 4. Stockholm Environment Institute, Stockholm, Sweden.

Pearce, F. 2004a. China drains life from Mekong river. *New Scientist* 2441. (Online.) URL: <http://www.newscientist.com/article.ns?id=mg18224411.700>.

———. 2004b. Chinese dams blamed for Mekong's bizarre flow. *New Scientist*. (Online.) URL: <http://www.newscientist.com/article.ns?id=dn4819>.

Pearson, R. 1999. A political economy analysis of the impact of agrarian change and urbanisation on communal irrigation systems in the Chiang Mai valley, northern Thailand. Page 298. Department of Anthropology. Macquarie University, Sydney, Australia.

Phongpaichit, P., and C. Baker. 2004. Thaksin: the business of politics in Thailand. Silkworm Books, Chiang Mai, Thailand.

Pichyakorn, B. 2003. Involvement of non-state actors in the development of water law in Thailand: a role that is ignored? *Non-state Actors and International Law* 3:231–250.

Plinston, D., and H. Daming. 1999. Policies and strategies for the sustainable development of the Lancang River Basin. (TA 3139-PRC). Water Resources and Hydropower. Asian Development Bank, Manila, Philippines.

Rankin, K. N. 2003. Anthropologies and geographies of globalization. *Progress in Human Geography* 27:708–734.

Rigg, J. 1991. Thailand's Nam Choan Dam project: a case study in "greening" of South-east Asia. *Global Ecology and Biogeography* 1:42–54.

Samabuddhi, K. 2002. Reef blasting plan on hold for a review. Bangkok Post, 1 August 2002. Bangkok, Thailand.

Scott, J. C. 1998. Seeing like a state. Yale University Press, New Haven, Connecticut, USA.

Sneddon, C. 2002. Water conflicts and river basins: the contradictions of co-management and scale in northeast Thailand. *Society and Natural Resources* 15:725–741.

Sneddon, C., L. Harris, and R. Dimitrov. 2002. Contested waters; conflict, scale and sustainability in aquatic socioecological systems. *Society and Natural Resources* 15:663–675.

Social Learning Group. 2001. *Learning to manage global environmental risks: a comparative history of social responses to climate change, ozone depletion and acid rain.* MIT Press, Cambridge, Massachusetts, USA.

Swyngedouw, E. 1997a. Excluding the other: the production of scale and scaled politics. Pages 171–180 in R. Lee, and J. Wills, editors. *Geographies of economies.* E. Arnold, London, UK.

———. 1997b. Neither global nor local. "Globalization" and the politics of scale. Pages 137–166 in K. Cox, editor. *Spaces of globalization: reasserting the power the local.* Guildford, New York, New York, USA.

Techawongtham, W. 2003. Salween project: Krai Sak warns dams may blur borderline; rights violations were also likely. Bangkok Post, 29 April 2003, Bangkok, Thailand.

TERRA. 1998. From the Mekong to the Chao Phraya: the Kok-Ing-Nan water diversion project. *Watershed* 4:10–24.

The Economist. 2003. Damned if you do—the World Bank ponders the Nam Theun dam. *The Economist* 369. (Online.) URL: http://www.economist.com/world/asia/displayStory.cfm?story_id=2251859.

———. 2004. The sweet serpent of South-east Asia: how much longer will the Mekong remain the world's last great unspoiled river? *The Economist* 370.

Towers, G. 2000. Applying the political geography

of scale: grassroots strategies and environmental justice. *Professional Geographer* **52**:23–36.

Walker, A. 2003. Agricultural transformation and the politics of hydrology in northern Thailand. *Development and Change* **34**:941–964.

Williams, R. W. 1999. Environmental injustice in America and its politics of scale. *Political Geography* **18**:49–73.

Wittayapak, C., and P. Dearden. 1999. Decision-making arrangements in community-based watershed management in Northern Thailand. *Society and Natural Resources* **12**:673–691.

Wolf, A. T. 1997. International water conflict resolution: lessons from comparative analysis. *Water Resources Development* **13**:333–365.

Young, O. R. 2002. The institutional dimensions of environmental change: fit, interplay and scale. MIT Press, Cambridge, Massachusetts, USA.