

Domestic environmental activists and the governance of the Ganges and Mekong Rivers in India and China

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Abstract It is generally considered difficult to resolve negative unidirectional externalities within hydro-hegemonic basins in which the upstream powerful riparian has the incentive to unilaterally develop the river without regard to downstream consequences. Weaker downstream riparian states can resort to issue linkages and side payments to coerce a change in the upstream hydro-hegemon's behavior, but the success of these tools depends on the specific political and economic situation in the basin and on the preferences of the hydro-hegemonic state for cooperation. Neglected in the literature is another possibility. Through a consideration of the sanctioned discourse of watershed management at the domestic levels, this article shows that domestic environmental non-governmental organizations and policy entrepreneurs—through the application of a range of tools—can work to change the domestic water management discourse from a state-hydraulic paradigm to a more sustainable water management paradigm. When these efforts are successful, we can find that these non-state actors can perform a crucial function in cleaning up domestic stretches of international rivers, which produces positive externalities downstream. In the process, they are able of achieving what often years of international negotiations failed to accomplish. Drawing on semi-structured interviews, India's policies on water quality in the national stretches of Ganges Basin and China's policies on biodiversity in the national stretches of the Mekong Basin are used to make this argument.

Keywords International rivers · Domestic non-governmental environmental movements · Ganges River · Mekong River

Abbreviations

CBIK Center for Biodiversity and Indigenous Knowledge
CPCB Central Pollution Control Board
DNGOs Domestic Non-governmental Organizations

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GAP	Ganga Action Plan
MRC	Mekong River Commission
SCC	Supreme Court Case
SCR	Supreme Court Ruling
SPCBs	State Pollution Control Boards

1 Introduction

Existing propositions over managing international rivers have tended to suggest that in an upstream–downstream relationship in which the upstream state is the powerful riparian (or the “hydro-hegemon”) (Zeitoun and Warner 2006), the latter is likely to develop the river to meet its domestic needs and export all negative and positive externalities to the weaker downstream riparian (Lowi 1993). Such an asymmetric incentive structure is especially difficult for resolving water quality issues and protecting biodiversity. This difficulty arises because the upstream hydro-hegemon has an incentive to unilaterally develop the river to secure its interests and avoid paying the sunk cost associated with cleaning a polluted river or protecting biodiversity (Sigman 2004).

To transform this incentive structure and minimize the social, economic, and political losses inflicted from negative unidirectional externalities, downstream weaker states can use issue linkages or side payments to provide the motivation for upstream hydro-hegemonic states to address transboundary water issues (Dinar 2006). For example, the dispute over the high chlorides contents of the Rhine was only addressed when side payments were used (Dieperink 2011).

However, the possibility that an upstream hydro-hegemonic state might—without being compelled, bribed, or coerced—unilaterally undertake the initial steps to address environmental degradation of an international basin, while refusing to negotiate these issues with its weaker downstream riparian neighbors, is not considered in the existing literature. This article argues that by examining domestic politics and analyzing the tools and channels of influence available to environmental domestic non-governmental organizations (DNGOs)¹ and policy entrepreneurs² to compel states to protect their national stretches of an international basin, we can better appreciate how asymmetric interests may be surmounted. Consequently, the core question is: what are the pathways, channels, or tools by which non-state actors try to influence the behavior of governments within the hydro-hegemonic state on highly contentious issues that have failed to be properly managed at the international negotiation table?

This article shows that, by participating in the domestic watershed management discourse and drawing on scientific knowledge to challenge government declarations, non-state actors can open up a multi-level management perspective by influencing the behavior of sub-national and national government authorities, businesses, and residents. This new

¹ Environmental DNGOs are “non-profit groups whose primary mission is to reverse environmental degradation or promote sustainable forms of development” (Princen et al. 1994, p. 16).

² Policy entrepreneurs are “political actors who promote policy ideas” (Mintrom 1997, p. 739), including the production and dissemination of scientific knowledge (Huitema and Meijerink 2009, p. 224). Kingdon (1995) argues that policy entrepreneurs can be located anywhere, whether it is in civil society or government, including politicians, civil servants, researchers, and lobbyists. They can assume advocacy, advisory, or intermediary functions, and they “need opportunities in the form of problem and political windows to get their new policy ideas and plans accepted and realized” (Huitema and Meijerink 2009, p. 224, 390).

perspective may permit the discourse to become more participatory, with the interest of civil society influencing the domestic policymaking process, and potentially also the transboundary watershed management agenda. In the process, these environmental activists may alter the hydro-hegemonic states' behavior toward their national stretches of the international basin and succeed to accomplish what years of international negotiations failed to achieve. The tools used in the process of altering the hydro-hegemonic states' behavior can include awareness raising campaigns, leafleting, demonstrations, lobbying of government officials, monitoring government compliance with existing legislation, and litigation. The argument this article advances is important because it provides a potentially alternative approach toward addressing highly contentious issues, such as water quality and biodiversity, and a means toward mitigating the potential for conflict or tension among riparian states.

To support this argument, we carry out a comparative analysis of India on the Ganges and China on the Mekong. Both states are hydro-hegemony states that have tended to apply the absolute sovereignty principle to water resources management. While the tools employed in India and China by DNGOs are partly the same, it is also evident that the political system provides constraints on civil society action, leading to DNGOs adjusting to these constraints. This analysis enables us to draw broader conclusions about the capacities of environmental DNGOs and policy entrepreneurs in different political systems to influence the water management discourse and contribute to lessening negative unidirectional externality problems that exist in river basins with asymmetric power distributions.³

Data in this paper come from field research in India and China. Fieldwork in China was conducted for 3 months from October 2008 to January 2009, while fieldwork in India was conducted from January 2002 to June 2002 and updated in June 2011. In China, 28 interviews were conducted with environmental DNGO staff and Chinese researchers and governmental advisors in universities and think tanks. Given the sensitivity of the subject in China, all interviewees were assured anonymity. For the India case, interviews were conducted with leaders of environmental DNGOs and data were gathered through research in government ministries and think tanks. Experts in the United States were also interviewed for this study.

Before presenting the main analysis, the following section considers the major assumptions within the literature on managing international rivers and the role of environmental activists in addressing water management issues in international watersheds. This argument is then applied to India's portion of the Ganges River followed by China's portion of the Mekong River. After a summary of the findings and a comparison of the cases, the paper closes with directions for future research.

2 DNGOs, hydro-hegemony, and management of international basins

The common thread within the literature on managing international rivers is the assumption that cooperation can be realized when upstream riparians abandon the absolute sovereignty principle and accept the limited sovereignty principle (Delli Priscoli and Wolf 2009). Under absolute sovereignty, states are entitled to exploit the water resources of an international basin without "obligations to downstream states" (Schulz 2007, p. 145). In contrast, the idea of limited sovereignty is contained in the no-harm principle, which argues that states should not use their territorial waters in ways that cause harm to

³ For more information on positive and negative unidirectional externality problems (see Dombrowsky 2009).

downstream riparians. In practice, the no-harm principle is softened by the concepts of equitable and reasonable use of water resources, which acknowledge that harm to other riparians cannot always be avoided but that it should be minimized and mitigated (Schulz 2007, pp. 145–147). Yet, a shift from an absolute sovereignty to an equitable and reasonable use principle is particularly problematic in basins in which upstream states are politically, economically, and militarily dominant (Mumme 1985; Weinthal 2002; Wolf 2007; Pachova et al. 2008).

Another prevalent assumption within the existing literature on international water management has been that riparian states behave as unitary actors and they are the only relevant actors. Consequently, the literature has failed to systematically integrate a consideration of domestic politics into its examination of the factors influencing conflict and cooperation (Giordano et al. 2002; Warner and Zawahri 2012; Suhardiman and Giordano 2012; Lopes 2012). Yet, neoliberal and constructivist approaches to international relations have made a number of propositions to the effect that diverse domestic and international actors can influence policy outcomes and the behavior of central governments at the international level (Milner 1998; Goldstein and Keohane 1993; Putnam 1988). These actors can include subnational government agencies, political leaders, interest groups, political parties, DNGOs, religious groups, and epistemic communities.

Despite its general neglect of domestic politics, the consequence of the interaction between state and non-state actors on the behavior of riparians in the international arena has been noted by a few studies. For example, domestic pressure from constituents and fear of retaliation from political parties prevented Nepal's government from conceding to cooperation with India until 1996 when a coalition between different parties assured the ratification of the Mahakali Treaty (Iyer 1999). A change in the ruling political party or leadership increased the potential for treaty formation between India and Pakistan over the Indus River (Alam 1998).

With relevance to environmental NGOs, neoliberals and constructivists have explored how these non-state actors can influence international negotiations traditionally led by central governments (Gupta 2003, pp. 477–482). An example of the role of non-state actors in watershed management can be observed in the case of the Ilisu Dam on the Tigris River in Turkey whereby non-Turkish NGOs located in Western Europe successfully led a campaign to force European governments to withdraw export credit guarantees for their companies involved in the dam's construction (Scheumann 2008; Warner 2011).

Despite these few important studies, there is no research program that looks in a systematic way at domestic politics and the role of non-state actors in international watershed management. Moreover, the literature on managing international rivers has failed to provide a systematic analysis of the relative distribution of power between various actors within civil society and different levels of government. That is, the literature has failed to appreciate that states represent the power struggles between different social actors and sub-national authorities to promote their interests. By using diverse channels of power, non-state actors, such as environmental activists,⁴ can pressure hydro-hegemony to alter their behavior and in the process succeed to achieve what years of international diplomacy failed to accomplish.

⁴ While hydro-hegemony can elect to use either hard or soft power to secure their interests in using the international river (Zeitoun et al. 2011), non-state actors, such as DNGOs or policy entrepreneurs only have the options to use soft power.

Watershed management, DNGOs, and policy entrepreneurs

To appreciate the influence of DNGOs and policy entrepreneurs on international watershed management, it is necessary to consider the dilemma confronting riparian states. The fish, water, soil, microorganisms, forest, farmland, and groundwater within a watershed function as an integral unit whereby changes in one part can influence other parts of the ecosystem. When basins encompass international borders, they impose on riparians interdependent and vulnerable relationships that ideally lead states to coordinate their actions in a river's development and management at a multi-level, which includes the sub-national, national, and basin (Zawahri 2008). The coordination of action is needed, because decisions made at the national and sub-national levels regarding watershed management can determine the problems or issue areas confronting negotiators at the international basin level. In other words, "it is often (conveniently) ignored that water management within a riparian country is a major contributing factor to transboundary water problems and conflicts" (Qaddumi 2008, p. 10). Domestic water use patterns may worsen water stress and/or water scarcity on a basin-wide scale (Ibid.).

How a state manages its national freshwater supplies, that is, to what extent it balances domestic economic, social, and environmental considerations, depends on the political agenda of the dominant actors within the state (Allan 2003; Sneddon and Fox 2007). Allan (2003) describes a country's watershed management as a *sanctioned discourse*: problems are added or deleted from agendas as a result of a process of "hegemonic convergence" (Allan 2003, p. 21), in which parties on multiple levels (central government, sub-national authorities, non-state sectors) compromise and decide on the direction of watershed management depending on their bargaining power. Over time, the process of hegemonic convergence may shift as actors other than the central government enter the discourse. This shift can turn environmental problems, such as water pollution and biodiversity issues, from an isolated focus of public policymaking into one that integrates the concerns of multiple sectors of society (Allan 2003, pp. 1–2, 12, 21).

While many domestic actors can be involved in the management of water resources (Gupta 2003; Shrestha et al. 2010), we focus on the interactions of environmental DNGOs and policy entrepreneurs with national and sub-national governments and local stakeholders, such as local communities and businesses. This focus enables us to adequately consider the influence of environmental activists on the sanctioned discourse. Environmental activists enter this sanctioned discourse in response to their government's failure to provide basic public goods to society, such as effectively managing water pollution, assuring the sustainable development of a watershed, or protecting the ecosystem's biodiversity. In fact, it is argued that environmental activists "appear to be key actors in moving societies away from current trends in environmental degradation and toward sustainable" development (Princen et al. 1994, p. 11).

Although our study is interested in the domestic level interaction of DNGOs, other NGOs can operate at a multi-level environment that includes not just the local, but also the national, regional, and international, which permit them to participate in transnational advocacy networks.⁵ Through their contacts with these advocacy networks, DNGOs can gain knowledge through international information exchange (Keck and Sikkink 1998; Princen et al. 1994).

⁵ Transnational advocacy networks also enable DNGOs to draw on international actors to help put pressure on national governments (Risse-Kappen 1995), particularly through the boomerang model (Keck and Sikkink 1998). This strategy however was not used by the non-state actors in the cases analyzed in this article.

At both the international and domestic levels, environmental activists can assist in the formation and content of environmental treaties by lowering the transaction costs of negotiating, implementing, and complying with international commitments (Princen et al. 1994; Betsill and Corell 2001; Campins-Eritja and Gupta 2002; Gupta 2003). Empirical analysis has shown that the denser the concentration of environmental international NGOs in a state, the more likely that the state will negotiate (Zawahri et al. 2009; Zawahri and McLaughlin Mitchell 2011) and ratify environmental agreements (Frank 1999).

To gauge the influence of environmental DNGOs and policy entrepreneurs at the watershed management level, we draw on the work of Betsill and Corell (2001). To measure the influence, we need to: (1) capture the intentional transmission of information to appropriate actors and (2) document the alteration in behavior that is a direct response to the transmitted information (Betsill and Corell 2001). In the process of documenting these two indices, the various channels of influence by which environmental activists are able to exert their power can also be identified. Environmental DNGOs can use these pathways of influence to monitor and affect the environmental policymaking process in its various phases, which include agenda setting, policy choice, implementation, and compliance (Potter and Taylor 1996).

One source of influence for DNGOs and policy entrepreneurs derives from their possession of specialized asymmetric knowledge. The environmental activists in this study tend to operate at the local level, focus on one issue area, and have extensive contacts with local stakeholders. This strategic location enables DNGOs and policy entrepreneurs to gain highly specialized technical knowledge of the forces contributing to the ecological problems within the basin (Princen et al. 1994; Simmons 1998). Environmental activists can also take advantage of their location to independently research, collect, and analyze scientific data about the basin's environmental condition that can directly challenge government policy or proclamations.

Possession of this specialized knowledge is especially important in the highly technical environmental issue areas because it enables DNGOs to fill an information void, introduce new approaches to resolve ecological disasters, and help draw the public's awareness to environmental problems (DeSombre 2007). In this context, science becomes an influential tool to "create the scientific justification" to compel a change in behavior of the target audience (Gupta 2003, p. 446). Given the many actors involved and the complexity of managing an international basin, the role of science is critical to understanding and governing these ecosystems (Haas 2000; Dimitrov 2006; Gerlak, Lautze and Giordano 2011).

To turn this technical asymmetrical knowledge into influence, environmental activists can also mount pressure to alter the behavior of government officials at the national and sub-national levels, polluting industries and hospitals, or society (Clark 1995) by disseminating their technical knowledge and their recommendations to the public, media, and government through leafleting, photo exhibitions, demonstrations, civic disobedience, lobbying, monitoring, and litigation.

DNGOs' close proximity to the people who rely on the watershed for their livelihoods enables them to implement effective educational campaigns to alter behavior that degrades the environment (Princen et al. 1994; Simmons 1998). The public's perception that DNGOs' information is more credible than information from government sources also endows them with moral capital and persuasive power, which may lead the populace and government to change their behavior (Bryant 2005). This general perception that DNGOs are better suited to protect the ecosystem than highly bureaucratized governments (Von Hagen et al. 1998; Clark 1995) provides DNGOs with an alternative path of influence, which includes the ability to mobilize large segments of society to protest government

policy (Princen et al. 1994). These protests can enable DNGOs to gain access to decision-makers in order to influence the policy agenda by encouraging them to pay attention to environmental issues, and in the process persuade bureaucrats to alter their behavior (Simmons 1998).

Environmental DNGOs can also draw on their specialized technical knowledge to lobby civil servants in an attempt to persuade them to select environmentally sustainable policies or alter their behavior during the implementation phase in a manner that is in compliance with existing legislation or international environmental agreements. In cases where the central government experiences inter-ministerial conflicts, environmental activists can exploit such divisions and work with various branches of the government to direct policy toward environmental protection. DNGOs can also “frame” the issue in a manner that “fits” government officials’ existing interests and in the process push policy into a direction that protects the environment through the introduction of ideas and recommendations (Keck and Sikkink 1998). Another means of influence is to cultivate and build positive relationships with powerful government officials, and through these relationships, environmental activists are able to influence the direction of policy. At times underpaid civil servants may lack the incentive to implement existing environmental legislation and DNGOs can behave as watchdogs that monitor these failures to implement and comply.

In democratic regimes, such as India, environmentalists can have a sympathetic political space to operate, along with several access points in the political process, which can permit them to pursue litigation to compel the government’s compliance with existing legislation (Gupta 2003; Stone 1972). During elections, DNGOs have the opportunity to influence the policymaking process by packaging information in a manner that sways voters’ attention toward an issue area and in return influence the election’s results (DeSombre 2007). In authoritarian states, such as China, DNGOs can still affect the government because bureaucrats can lack proficiency in technical areas, which may increase their dependence on alliances with DNGOs to fulfill their assigned tasks. In addition, decentralization processes in states such as China have led to an invigoration of the local governance level at a time when the central government assigned more authority to local governments and in turn put legislation in place that would allow DNGOs to exercise control on local governments (Economy 2004). Environmental DNGOs can also conduct dissemination campaigns and influence politicians through their informal networks (Mertha 2008). Thus, DNGOs in both democratic and authoritarian countries can work to mobilize various sources of power to alter the domestic policy debate in a manner that protects the environment or draws the public’s attention to the government’s failure to comply with its own environmental protection laws.

Although India is a democracy and China has an authoritarian government, these cases share several important features that allow us to examine the channels of influence available to environmental activists to affect the sanctioned discourse. India and China are both powerful riparians confronted with domestic environmental activists operating along an international watershed. While the central governments of these states are strong, they both rely on local governments to implement and enforce environmental policies. As the following sections will show, DNGOs and policy entrepreneurs in both India and China have been promoting compliance with existing legislation or agreements to generate public goods. In the process, they have succeeded to alter the domestic policymaking process in hydro-hegemonic riparian states.

3 Cleaning up the Ganges River

The transboundary Ganges River forms in India at the confluence of several tributaries originating from the Himalayan Mountains of Tibet (China) and India. After receiving additional tributaries from Nepal, the Ganges continues its trek in India until it enters Bangladesh. Inside Bangladesh, the Ganges joins the Brahmaputra River to form the Barak–Meghna River, which empties into the Bay of Bengal. Due to the rugged terrain and the relative abundance of water in China, it has not developed the tributaries. Nepal and India have signed treaties over dam construction to generate hydropower, expansion of irrigation, and building embankments for flood management.⁶ In India and Bangladesh, however, the Ganges flows through some of the most densely populated regions in the world. In India, the Ganges, or Ganga as it is known there, is a holy river for Hindus and it has been integral to India's civilization (Interview with Mishra 2011; Alley 2012). Bangladesh owes the fertility of its soil in its southwestern territory to the Ganges.

3.1 Attempts to govern the Ganges

The need to negotiate over the management of the Ganges River surfaced in 1951, when India initiated plans to construct a barrage at Farakka to rehabilitate its Calcutta Port. The barrage, located within 15 km of the Indo-East Pakistani⁷ border, would divert water from the Ganges into the Bhagirathi–Hooghly River to flush the silt deposits and improve the port's navigability. For Eastern Pakistan, the barrage threatened the quality and quantity of water it received, jeopardized its plans to build an extensive irrigation system, threatened the river's navigability, and decreased the economic viability of its agricultural and fishing sectors. Attempts to reach an agreement proved mostly futile (Islam 1987; Swain 2004).

As Bangladesh gained its independence from Pakistan, relations between it and India improved briefly, which laid the groundwork for addressing their water disputes through the establishment of the Joint Rivers Commission (Joint Communication Prime Minister of India, Mrs. Indira Gandhi, and Prime Minister of Bangladesh, Sheikh Mujibur Rahman, Dacca, March 19, 1972). The commission was expected to assist in developing the shared river system in a cooperative manner. Upon the completion of the Farakka Barrage, India and Bangladesh signed a partial agreement allocating the Ganges' water during a forty-one day dry period from April to May 1975 (partial Accord Between India and Bangladesh on Farakka, in Bhasin 1996: 386). The treaty served to recognize India's right to operate the Farakka Barrage (Swain 2004). Once it expired and bilateral relations deteriorated, India proceeded with the unilateral development of the river (Subedi 1999; Swain 2004).

A change in the ruling parties inside both India and Bangladesh provided another opportunity to negotiate an accord to share the dry-season flow. The 1977 agreement lasted for five years, during which time the riparians were expected to search for means to augment existing supplies (Agreement Between the Government of the Republic of India and the Government of the People's Republic of Bangladesh on Sharing the Ganges' Waters at Farakka and on Augmenting its Flows, November 5, 1977. 17 I.L.M. 103 (1978)). After the agreement expired, the riparians negotiated temporary memorandums of understanding

⁶ Since India gained its independence from Britain, it signed several treaties with Nepal. These include: Kosi Treaty of 1954 and its amendment in 1966; the Gandak Treaty of 1959 and its amendment in 1964; Tanakpur Treaty of 1991; and the Mahakali Treaty of 1996.

⁷ From 1948 until 1971, Pakistan consisted of two wings—western and eastern. In 1971, eastern Pakistan became Bangladesh.

(MOUs) for sharing the dry-season flow between 1982 and 1988. The first MOU was in 1982, and it covered the dry period from 1983 to 1984 (Indo-Bangladesh Memorandum of Understanding, New Delhi, October 7, 1982). The riparians failed to reach an MOU in 1985, but in that year, they negotiated an understanding for the 1986–1988 dry season (Memorandum of Understanding between India and Bangladesh on the Sharing of the Waters of Common Rivers, November 22, 1985, in Bhasin 1996: 967). Negotiations failed to produce an MOU for sharing the waters during the dry season from 1988 through 1996, despite attempts by Bangladesh to internationalize the dispute to pressure India to cooperate. In 1996, India and Bangladesh signed a treaty to share the dry-season flow for the following 30 years (Treaty Between the Government of the Republic of India and the Government of the People's Republic of Bangladesh on Sharing of the Ganga/Ganges Waters at Farakka, 36. I.L.M. 519 (1997)).

Several conclusions may be drawn from these attempts at cooperation. First, the focus of negotiations has always been on water quantity (Islam 1987; Tanzeema and Faisal 2001). There is no question that attempting to share the dry-season flow is a critical problem that requires a stable arrangement, but these riparians face other issues that have yet to be resolved. These issues include the need to manage floods and droughts, drainage congestion, and the quality of water within the basin (Nishat and Faisal 2000; Faisal 2002). Of these issues, perhaps the most contentious is the quality of water carried by the Ganges River. However, negotiations have failed to reach a resolution on water quality issues, and in fact, the 1996 treaty was made possible only when Bangladesh agreed to India's request to focus negotiations only on sharing the dry-season flow at Farakka (Faisal 2002).

Second, on the insistence of India, negotiations and agreements have always been bilateral, in spite of attempts by Bangladesh to transfer to multilateral negotiations (Islam 1987; Verghese 1990; Crow and Singh 2000). The bilateral negotiation framework has permitted India to prevent any attempt by Bangladesh and Nepal to form a coalition that would upset the existing distribution of capabilities within the basin, which would minimize India's ability to secure its interests from a treaty (Crow and Singh 2000). Finally, India is perceived by upstream Nepal and downstream Bangladesh as "a giant hegemonic neighbor intent on securing deals favorable to it at the expense of its smaller neighbors" (Subedi 1999, p. 954).

3.2 Regulating water pollution in India

The management and regulation of the quality of domestic water resources resides with India's states and not the central government (Narain 2000; Iyer 2011). Passed in 1974, the Water Prevention and Control of Pollution Act (known as the Water Act) became the first national law covering pollution control. The Water Act set standards for the quality of wastewater discharged into water bodies and established the Central Board for Water Pollution Prevention and Control at the union government level, and similar boards were established in each of India's states (Narain 2000). In 1988, the boards were renamed the Central Pollution Control Board (CPCB) and the State Pollution Control Boards (SPCBs). The CPCB was responsible for the development of plans to control and prevent water pollution, while the SPCBs were responsible for implementing the Water Act and assuring domestic compliance with pollution laws (World Bank 2011). In an attempt to increase the boards' authority to respond to the national water pollution problem and provide citizens the right to ensure compliance, the Water Act was amended in 1978 and 1988 (Ibid).

In the beginning of the 1980s, the CPCB undertook a comprehensive survey of the nation's rivers, which included a report on the Ganges River detailing its pollution and

degradation (Sharma 1997). Based on this analysis, in 1984, the Department of Environment (now the Ministry of Environment and Forests) prepared the Ganga Action Plan (GAP) to improve the water quality within the Ganges by preventing pollution from reaching the river (Status Paper on River Ganga 2009).⁸ The following year, the Central Ganga Authority was established to implement GAP, and the Ganga Project Directorate was created to execute the Authority's projects. Although approved by the Indian government in 1985, GAP was inaugurated in 1986 by then Prime Minister Rajiv Gandhi.

The need for GAP arose because several factors have been contributing to the destruction of the Ganges' water quality. Indian cities, towns, and villages residing along the Ganges have the capacity to treat 13 % of their sewage, while the remaining is dumped untreated into the river (Economist 2008; Interview with Mishra 2011). Similarly, industries and factories—leather, pharmaceuticals, chemical, and tanneries—discard their untreated effluents into the Ganges. Pesticides and fertilizers that have fueled the green revolution wash directly into the Ganges (Rao 2001; Gopal 2004). Due to its religious significance as a final resting place for Hindus, thousands of crematoria line the Ganges along the holy city of Varanasi (Interview with Mishra 2011; Alley 2012). The inability to pay the high cost for wood and electricity needed to operate these crematoria has resulted in the dumping of tens of thousands of partially cremated and un-cremated corpses into the river. Animal carcasses can also be found floating in the Ganges, along with religious offerings and solid waste (Gopal 2004).

The consequences of these insults have been severe, in spite of the prevalent perception that the river has extensive cleansing powers (Alley 2002, 2012; Interview with Mishra 2011). The levels of fecal bacteria and organic waste exceed international and local standards (Hamner et al. 2006; Sarkar et al. 2007). Waterborne diseases—dysentery, cholera, gastrointestinal disease, hepatitis-A, E. Coli O157, and typhoid—plague residents and pilgrims seeking to wash away their sins by bathing in Ganga and drinking its water (Hamner et al. 2006). Aquifers and tributaries near the river have also been contaminated (Interview with Alley 2011; Interview with Jaiswal 2011). Consequently, as it enters Bangladesh, Padma, as the Ganges is known there, is heavily contaminated (Elhance 1999; Nishat and Faisal 2000).⁹

The management of water quality in India, as with other environmental issues, tends to have a strong legal framework seeking to protect against pollution and clean existing pollution (Goldar and Banerjee 2004; Iyer 2011; World Bank 2011). A vast bureaucratic structure exists to ensure implementation and enforcement of these environmental provisions. Combining strong legislation and a bureaucracy that seeks to secure implementation should guarantee or at a minimum improve the chances that environmental problems, such as poor water quality, are addressed. It is, however, at the implementation stage that India's environmental laws fail to protect the environment (Narain 2000; Iyer 2011). This failure is attributed to several factors. The management and protection of domestic water supplies is fragmented between several ministries and organizations, which has obstructed attempts at implementation of existing policies (Narain 2000; World Bank 2011). Bureaucrats are confronted with a combination of insufficient resources, underpay, and sub-national

⁸ Although the initial objective of GAP was to prevent the river's pollution, it changed to achieving water quality at bathing class standard that allows some pollution to reach the river (World Bank 2011).

⁹ As it enters Bangladesh, the water has high concentrations of TDS, chlorides, and sulfates among several other chemicals (Asafuddowla 1995). This pollution has harmed the agricultural and industrial sectors, ruining the livelihood of farmers and industrialists in Bangladesh (Swain 1996; Nishat 1996). Lack of access to clean water has meant that waterborne diseases are the major cause of mortality and morbidity among people residing near Padma (Ahmed et al. 1998).

politics, which minimizes their incentive to implement and enforce compliance with environmental legislations (Stuligross 1999; Sahu 2008). At the sub-national level, bureaucrats responsible for water quality tend to be understaffed, not properly trained, and incompetent (Interview with Jaiswal 2011; World Bank 2011). Moreover, the SPCBs “in almost all Ganga basin states are under-resourced and do not have adequate technical staff or equipment to carry out their assigned functions” (World Bank 2011: 7). Cognisant of these weaknesses, polluting industries have little incentive to comply with environmental legislation (*Ibid.*). Due to these problems, environmental activists have been critical in compelling implementation, enforcement, and compliance with existing legislations.

3.3 Tools and channels available to DNGOs and policy entrepreneurs to enforce compliance

DNGOs and policy entrepreneurs have pursued various tools and channels to encourage local and national governments to comply with national legislation. These tools include public awareness campaigns, collection and dissemination of scientific data, monitoring compliance with existing regulations, mobilization of the masses in popular protests, letter writing to government officials along with visits to discuss scientific data, lobbying of government officials, organizing cleaning campaigns to directly remove pollution from the river, and litigation. Among the most prolific actors that seek to assure implementation of GAP and clean the Ganges are two DNGOs (Eco Friends and the Sankat Mochan Foundation), Hindu priests (or Sadhus), and policy entrepreneurs (particularly the environmental lawyer M.C. Mehta).

Eco Friends was started in 1993 by Rakesh Jaiswal and operates from Kanpur, one of the largest industrial and commercial cities along the Ganges (Hammer 2007; Interview with Jaiswal 2011). This DNGO has used several effective tactics to influence the government’s and society’s behavior and in the process has attempted to encourage compliance with GAP and exiting environmental laws (Hammer 2007). Through its lobbying efforts, it pressured the government and industry to construct Chrome Recovery Plants to prevent the chemical’s seepage from leather factories into the Ganga and to close non-complying plants (Interview with Jaiswal 2011). After compiling a list of factories ignoring a court order to install effluent treatment plants, Eco Friends pressured the state to shut-down 250 factories (Interview with Jaiswal 2011). To escape the construction of treatment facilities, some tanneries fled to rural areas where their effluents contaminated irrigation water and harmed the health of area farmers. Continuing with its watchdog role, Eco Friends followed these factories, collected data on the contamination of their effluents, and shared this information with government officials to compel a shutdown of these facilities (Interview with Jaiswal 2011).

Through its monitoring efforts, Eco Friends was able to collect information that challenged government proclamations and questioned GAP’s success. Members of Eco Friends mapped drains disposing effluents into the Ganges and used this information to challenge government proclamations of its success in connecting all the drains of the city of Kanpur to the newly constructed wastewater treatment plants (Alley 2002; Quarterly Monitoring of Ganga and Ganga Action Plan (GAP) in Kanpur 2004; Interview with Alley 2011). This DNGO also organized a public protest to block the largest drain it discovered carrying effluents from the tanneries into the Ganges (Haberman 2006). The objective has been to compel the SPCBs to comply with environmental legislation by sharing information with civil servants and encouraging them to act (Interview with Jaiswal 2011).

Eco Friends also visited the city's wastewater treatment plants, pumping stations, and tanneries to monitor their operations. In the main pumping station that delivers the city's sewage to the treatment plant, the DNGO discovered absent employees and untreated sewage being discharged into the Ganges (Quarterly Monitoring of Ganga and Ganga Action Plan (GAP) in Kanpur 2004). Because of malfunctioning of the wastewater treatment facilities, it also discovered that tannery effluent discharged directly into the Ganges untreated (Interview with Jaiswal 2011). The DNGO also discovered that the toxic tannery sludge was not being disposed in a safe landfill, but in an indiscriminate and unsafe manner resulting in the contamination of ground water (Quarterly Monitoring of Ganga and Ganga Action Plan (GAP) in Kanpur 2004; Interview with Jaiswal 2011). Again, it shared this information with the SPCBs in an attempt to "shame them into action" (Interview with Jaiswal 2011).

To address the disposal of partially cremated and uncremated corpses into the Ganges, Eco Friends organized volunteers to collect, remove, and bury corpses in a cemetery they established along the Ganges (Interview with Jaiswal 2011). It then lobbied the government to operate Kanpur's electric crematoria continuously. To assure the proper functioning of these crematoria, it visited the three crematoria in Kanpur and discovered that they were not functioning regularly (*Ibid.*). After it raised this issue with the government, the District Magistrate took the necessary steps to ascertain that they operate properly. Despite the proper functioning of the crematoria, this DNGO discovered that they did not receive corpses for several months. After an investigation, Eco Friends discovered that the police department was not delivering unclaimed corpses to the crematoria (*Ibid.*). The issue was brought to the attention of the local administration. Several months later, the DNGO checked on the operation of the crematoria and discovered that two were working properly, while one was not (Quarterly Monitoring of Ganga and Ganga Action Plan (GAP) in Kanpur 2003–2004).

The DNGO carried out a public relations campaign to educate people about burying dead relatives instead of placing their remains in the Ganga. Use of this alternative approach requires a major cultural shift as it contradicts people's belief system (Hammer 2007).¹⁰ This campaign produced changes in society's social practices toward an acceptance of burials, which resulted in a substantial decrease of corpses in the river (Interview with Jaiswal 2011). In fact on June 13, 2011, Swami Nigamanada, a 34-year-old Sadhu, died during a hunger strike against the pollution of the Ganga. Instead of cremating and distributing his remains in the Ganga, the priest was buried (*Ibid.*). Eco Friends is also carrying out an education campaign to minimize the plethora of worship materials and idols flowing in the Ganges, and it organized cleaning programs to collect these and other material from the river as it flows through Kanpur (*Ibid.*).

Another influential DNGO is the Sankat Mochan Foundation, which was set up in 1982 by Veer Bhadra Mishra, a professor of hydraulic engineering and a Sadhu residing in the Hindu holy city of Varanasi, and two professors from Banaras-Hindu University. Since its inception, the foundation has sought to be a force for change, watchdog, provider of technical advice to government officials, and activist to assure implementation of GAP (Interview with Mishra 2011). In 1983, it initiated the Clean Ganga Campaign (Swatcha Ganga Abhiyan) during which the founding members would organize public meetings for the citizens of Varanasi to draw their attention to the Ganga's pollution and to educate

¹⁰ Jaiswal suggested that the practice of placing cremated bodies into the Ganga is not tied to the Hindu religion but associated with superstition (Interview with Jaiswal 2011).

them about pollution control and means by which they can modify individual behavior to reduce household waste discharged (Alley 1994; Interview with Mishra 2011).

With the passage of time, the Clean Ganga Campaign became more elaborate and included three days of celebrations that brought together schools, business leaders, political leaders, and scientists to consider the status of the Ganga pollution and means by which it can be cleaned. It also included a photo exhibition of the Ganga, which documented the various means by which the river was being contaminated (Civic Society Partnership Program 2005). To celebrate World Water Day, which is held on March 22 annually, the DNGO organized the formation of a human chain around the city.¹¹ Until today, the objective of all these events continues to be raising awareness about the river's pollution, discussing with the community and public officials means by which the river can be cleaned, and encouraging changes in behavior that can contribute to a cleaner river (Civil Society Partnership Program 2005; Interview with Mishra 2011).

The DNGO also worked with schools and local institutions to clean the Ganges by having them adopt Ghats (or steps leading to the river) to clean. During these cleaning campaigns, individuals pledged to remove garbage and corpses, and to keep the Ghats clean (Civil Society Partnership Program 2005; Interview with Mishra 2011). The DNGO also organized a four month campaign to clean the stretch of the river as it flows through Varanasi by removing trash, idols, and corpses. After this cleaning operation, the municipal authority took note of their efforts and it initiated its own plans to form campaigns to clean the river (Interview with Mishra 2011). Despite these successes, the DNGO continued to confront difficulties with society, which tends to believe that Mother Ganga is incapable of becoming polluted. To alter people's perceptions, the DNGO organizes tours of the river to prove its high level of contamination (Interview with Mishra 2011).

The DNGO's role as a watchdog was born out of a conference it organized in 1992, which brought together international experts and government official to discuss means by which the Ganga can be cleaned. One of the conclusions drawn from this conference was the need to establish an independent laboratory to collect and test the Ganga's water quality to expose, shame, and embarrass the government by revealing the inaccuracy of its data (Interview with Mishra 2011). In 1992, the Sankat Mochan Foundation established the research laboratory, which until today is monitoring the Ganges' water quality by collecting and testing daily samples of water from the river (Interview with Alley 2011). The lab is also testing effluents from the wastewater treatment facilities. Although the DNGO initially tested the water quality inside local wastewater treatment plants, after it released embarrassing data, it was no longer permitted to enter these plants (Interview with Mishra 2011).

The DNGO's data have been disseminated to not only government officials and India's prime minister but also to the media and scientific community, who used the information to challenge government-disseminated data that tended to be unreliable and manipulated (Shankar 1992; Interview with Alley 2011; Interview with Mishra 2011). Through the dissemination of information to the media, government officials were put on the defensive (Singh 2006). One incident of such a challenge arose when members of the DNGO discussed in the media the government's failure to test the fecal coliform count that, according to their tests, was high because of human and animal excreta (Alley 1994; Interview with Mishra 2011). Due to pressures from the media, the government decided to collect and publish data on the Ganges' fecal coliform levels and to sponsor a campaign to educate the

¹¹ In 2000, President Clinton invited Professor Mishra to share the platform with him in an event celebrating World Water Day (Interview with Mishra 2011).

public about changes in behavior that can lower these levels (Alley 1994, 2002; Interview with Mishra 2011).

The Sankat Mochan Foundation also formed alliances with the epistemic community in international institutions and research centers to investigate and develop new approaches to clean the river. One such alliance was with faculty staff at Montana State University to test the Ganges' water quality, which revealed the presence of E. Coli. This information was sent to the Indian Supreme Court for action (Montana State University 2008; Interview with Mishra 2011). Another alliance was formed with Professor William Oswald from the University of California at Berkeley to research and introduce alternatives to the electric wastewater treatment plants that were plagued by regular power outages, irregularities, and inefficiencies. This alliance resulted in the introduction of the advanced integrated wastewater pond system, which uses gravity to divert, transport, and collect wastewater in large ponds where oxygen-enriched bacteria can break down the waste with minimal electric requirements (Mishra 2005; Hammer 2007; Interview with Mishra 2011). Through the DNGO's negotiation with local municipal corporations responsible for treating wastewater, it was able to persuade them to use this technique. But, the provincial authority of Uttar Pradesh wanted municipalities to use the technology specified under GAP program. The DNGO continued its lobbying efforts and succeeded in meeting with Sonia Gandhi and Prime Minister Manmohan Singh. It received the support for the use of this technology from both high ranking politicians, and as a result, it was asked to prepare two detailed project reports. But it is still confronting difficulties from various bureaucracies, including the Ministry of Environment and Forestry, in its attempt to implement the use of this technology (Interview with Mishra 2011).

The DNGO continues to bring international and local experts together with government officials who oversee the implementation of GAP to discuss policy alternatives and share scientific knowledge (Ahmed 2004; Alley 1994; Civil Society Partnership Program 2005; Interview with Mishra 2011). From 2003 through 2005, the DNGO held capacity building workshops for 100 civil servants from the Municipal Corporations in Varanasi to train them on the extent of the Ganga's pollution, causes of this pollution, technologies to manage wastewater, and review rights given to them under the Indian constitution. These workshops proved important because as the DNGO discovered, Municipal Corporations tend to lack knowledge about their political rights and powers (Interview with Mishra 2011). Other stakeholders were invited to attend these workshops (Civil Society Partnership Program 2005). It also held a seminar bringing together experts from various fields, including politics, medicine, diplomats, and environmentalists to discuss the consequences of the river's pollution and means to address this contamination (*Ibid.*).

Both in coalition with DNGOs and as separate actors, Sadhus have joined the campaign to clean the Ganga because of its religious significance. Sadhus derive their power over the government from their ability to influence public opinion among many Hindus, especially during elections and religious holidays (Blakely 2008; Interview with Mishra 2011). The Sadhus' frustration with the Ganges' pollution exploded in January 2007, when they threatened to boycott a religious festival and commit mass suicide (O'Conner 2007). After several days of protests, the government agreed to close 150 polluting industries and release stored water to dilute the river. As Sadhus became more organized, their power increased, and they were able to gain a meeting with India's Prime Minister in which they received a commitment that GAP would be investigated (*The Economic Times* 2008). A month after this meeting, the Prime Minister declared the Ganga India's first "National River," in accord with requests made by the Sadhus, and he announced that he would

establish and chair a separate river basin authority to monitor the river's water quality (*Thaindian News* 2008; Status Paper on River Ganga 2009).

The environmental lawyer and policy entrepreneur M.C. Mehta has used PUBLIC INTEREST litigation to compel government institutions and industries to comply with existing environmental legislation (Alley 2009). The judicial process proved effective because, as unelected officials, India's judges can make decisions that may be unpopular with the government but provide society with collective future benefits (Reich and Bowonder 1992; Dam and Tewary 2005; Sahu 2008). The existence of public interest litigation has increased the powers of the judiciary to include oversight over the executive and legislative branches by assuring enforcements of existing legislation in many issue areas, including the environment and the rights of prisoners, children, and women (Rajamani 2007). As a result, experts have noted that "Rather than interpret laws, the [Supreme] Court increasingly acted as the executive, making environmental policies on behalf of the state and taking steps for their implementation" (Dam and Tewary 2005: 388). Through its judgments, the Indian Supreme Court introduced new principles for protecting the environment, established institutions, granted additional powers to existing institutions, and reinterpreted legislation (Sahu 2008).

M.C. Mehta versus Union of India and Others (1987 1 SCC 393), also known as the Ganga Pollution Case, is an example of environmental cases heard by the Supreme Court. In 1985, M.C. Mehta filed a public interest petition against the union government for failing to control the leather tanneries' disposal of effluents into the Ganges in Kanpur and the municipal corporation for discarding untreated municipal sewage directly into the Ganga. To consider Mehta's request that these effluents be treated as required by existing laws, the Supreme Court divided the petition in two (one against the industry and the second against the municipalities) and issued separate judgments. The court also decided to treat the case as a "representative action," meaning its judgments would apply to all industries and municipalities residing along the Ganges River (Alley 2009). The petition was published in newspapers throughout northern India to give notice to municipal corporations, industries, and town municipal councils of the case and to ask them to appear before the court (*M.C. Mehta vs. Union of India & Others*, [1987] 4 SCC 463).

The court first considered the case of the tanneries in Jajmau, Kanpur, 43 of which were represented by the Hindustan Chamber of Commerce and two by independent counsel. Counsel for the tanneries argued that six tanneries had installed primary treatment capacity and fourteen were in the process of doing so. The remaining were in the process of taking the proper steps to treat the effluents but they required additional time. Having found sufficient evidence to demonstrate that these industries were in fact contaminating the Ganges River through the discharge of untreated effluents, the court ordered that they install primary treatment capacity within the next six months or face closure. The 29 tanneries that failed to participate in the case were ordered to close immediately until treatment facilities were installed (*M.C. Mehta vs. Union of India & Others*, [1987] 4 SCC 463).

In the portion of the case against the municipal bodies for not treating wastewater prior to discharging it into the Ganges, government agencies argued that they were in the process of improving their wastewater management systems and cleaning the river. The court found them liable for not preventing the discharge of toxic effluents into the river, and it ordered municipal corporations to construct wastewater treatment plants (*M.C. Mehta vs. Union of India & Others* [1988] 2 SCR 530). In his judgment, Supreme Court Justice J. Venkataramiah ordered that other issues contributing to the Ganges' pollution be addressed. For instance, the court found that dairies in Kanpur were contributing to the

Ganges' pollution and ordered the municipalities to address this problem (*Ibid.*). To address open defecation, which is a considerable polluter of the Ganges, the court ordered the construction of public latrines that are free and open to all. The municipalities were required to oversee the proper disposal of partially cremated or uncremated corpses. Having learned of the difficulties that the SPCBs were confronting in prosecuting non-complying industries because of the latter's use of stay orders and the High Court's routine acceptance of such orders, the court ruled that the High Court should not accept such orders and it should hear these cases within two months of their submission (*Ibid.*). The court also ordered the central government to direct all educational institutions to allocate one hour per week to teach environmental protection and to identify a week to recognize the need to keep the city clean (*Ibid.*).

To assure compliance with these orders, Mehta pushed the Supreme Court to investigate whether the tanneries installed treatment plants. An investigation revealed that some 5,000 factories were not in compliance. The tanneries were given six weeks to comply, after which violators would be closed (Harnessing the Law to Clean Up India 1995). To improve the compliance rate and encourage industries along with government agencies to heed to the court's orders, the court set aside Friday sessions for discussing and issuing fines or closure orders for lack of compliance (Sahu 2008; Alley 2009). As a consequence, about 500 non-complying factories were closed. As for the municipal corporations, 19 out of 79 installed the infrastructure ordered by the Supreme Court. This poor compliance rate forced the Supreme Court to withhold funding for Phase II of GAP until Phase I was completed (Alley 2002, 2009).

M.C. Mehta (Calcutta Tanneries' Matter) versus Union of India and Others Writ Petition is an example of a representative action whereby the court's decision against the tanneries in Kanpur was extended to cover Calcutta. In its judgment, the Supreme Court noted its frustration with the tanneries and government institutions for failing to heed its previous orders to transfer all the polluting tanneries to a new location that had an effective wastewater treatment system. Relying on the polluter pays principle, the court fined the tanneries for their systematic pollution of the environment (Order of the Supreme Court Writ Petition (Civil) M.C. Mehta (Calcutta Tanneries' Matter) vs. Union of India and Others (December 19, 1996) Suppl. SRC 383).

3.4 The effects of India's DNGOs and policy entrepreneurs

Due to sustained pressure from environmentalists, DNGOs, and Sadhus, the central and state governments did alter their behavior to better address pollution of the Ganga. In the process, these environmental actors were constantly challenging the government's implementation of GAP and when the program proved ineffective they encouraged a change in policy. There have been positive impacts on water quality from GAP's implementation and efforts by environmental DNGOs to compel compliance with existing legislation. Of the 261 projects sanctioned under GAP, 259 were completed by March 2000, the end of Phase I (Ganga Action Plan 2003–2004).¹² These projects included 88 sewage interception and diversion channels, 35 wastewater treatment plants, 43 outdoor toilets, and 28 electric crematoria (Markandya and Murty 2000; Tare et al. 2003). Phase I also involved the installation of effluent treatment plants in industries, which increased from 14 to 55. West Bengal, which borders Bangladesh, received about 40 % of the total

¹² Although Phase I was targeted to end in 1990, it was extended to March 2000 (Ganga Action Plan, 2003–2004).

funding allocated under Phase I and 110 projects—including the largest number of wastewater treatment plants (Markandya and Murty 2000).

Yet, implementation of GAP has encountered several difficulties, which minimized the achievement of all envisioned benefits. As noted earlier, the selection of electricity to operate treatment plants and crematoria proved an unwise investment because Indian cities are plagued by power outages and high electricity costs (Interview with Meshra 2011; Status Paper on River Ganga 2009). DNGOs continuously sought means to pressure the government to pay their electricity bills and operate GAP project continuously. Although the union government was willing to pay for the construction of projects, local and provincial governments were responsible for funding the operation and maintenance costs. Since the regional governments do not see direct financial benefits from such payments, they have been less willing to expend the necessary resources (Reich and Bowonder 1992; Status Paper on River Ganga 2009). Also, corruption at the provincial level meant that the money was not spent properly (World Bank 2011). Another common problem that tends to plague implementation of India's environmental laws is the prevalence of underpaid officials that are assigned to monitor and punish polluters but lack the incentives to implement their assigned tasks (Reich and Bowonder 1992; Stuligross 1999). DNGOs have used the courts and media along with lobbying government officials to mitigate or minimize the negative consequences of these shortcomings.

Initial evaluations of Phase I revealed a reduction in the discharge of organic pollution, biological oxygen demand (BOD), and dissolved oxygen (Tare et al. 2003; World Bank 2011; Status Paper on River Ganga 2009). However, GAP has not been able to manage the high levels of coliform throughout the Ganga, and the river remains contaminated in between several cities including from Kannauj to Kanpur and Allahabad to Varanasi (Status Paper on River Ganga 2009). Other experts who assessed the Ganges' water quality before and after the GAP discovered a decline in heavy metals and pesticide residue levels (Markandya and Murty 2000). Out of the estimated 1340 million liters of water per day (MLD) of wastewater generated by the targeted 25 Class-I cities, a sewage treatment capacity of 865 MLD was created under Phase I (Status Paper on River Ganga 2009). In addition, about 45 % of the heavily polluting industries installed effluent treatment plants (*The Hindu* 2004).

Due to these sustained efforts at compelling compliance, GAP was able to reduce the degradation of the water quality, even as the region's population was increasing along with its consumption and pollution of the river and industrialization was rapidly expanding (Markandya and Murty 2000; Status Paper on River Ganga 2009). The city of Kanpur illustrates this point. In 1985, the wastewater generated by residents of Kanpur was 183 MLD. This quantity had increased to 205 MLD by 1993 and was 250 MLD in 2000. Of the 183 MLD generated in 1985, 133 MLD were dumped untreated directly into the Ganges, while the remaining wastewater was transferred for use in sewage-fed agriculture. Phase I was able to improve the capacity of trunks that collected and delivered wastewater to the newly constructed treatment plants. Due to these improvements, the quantity of wastewater dumped into the Ganges decreased to 99 MLD by 1993 (Tare et al. 2003). GAP II began in 1993 and covered 59 towns in five states along the Ganga. Although 319 schemes were sanctioned, only 200 were completed with a sewage treatment capacity of 129 MLD (Status Paper on River Ganga 2009). But, GAP did fail to achieve a river with bathing quality water (World Bank 2011). And today, many of the projects constructed under GAP are not operating properly because of poor management capacity and inadequate design (World Bank 2011; Alley 2012; Interview with Jasiwal 2011).

As a result of continued pressure from the environmental DNGOs and non-state actors to clean the river, Ganga was not only declared a "National River" by the Indian Prime

Minister but the central government established the National Ganga River Basin Authority (NGRBA) on February 20, 2009 under the Ministry of Environment and Forests (Status Paper on River Ganga 2009). Assigned with abatement of the Ganga's pollution, the NGRBA is chaired by the Indian Prime Minister and includes key ministers from the government and Chief Ministers from the five states sharing the Ganges. The objective is to prevent any pollution from reaching the river by 2020. To improve coordination and implementation of NGRBA's projects between the five provinces sharing the Ganges, the State Ganga River Conservation Authority was created (World Bank 2011). Currently, the Ministry of Environment and Forests is in the process of searching for funding to implement the plans to clean the Ganges (*Ibid.*).

4 Protecting biodiversity in the Mekong River basin

The transboundary Mekong River originates in the Tibetan highlands and then enters China's southwestern Yunnan province where it is known by its Chinese name of Lancang. Upon leaving Yunnan southwards, the Mekong runs through Myanmar, Laos, Thailand, Cambodia, and Vietnam. The Lancang-Mekong River basin physically connects Yunnan to mainland Southeast Asia. Within the basin, upstream China is the dominant state capable of unilaterally developing the river without recourse to downstream concerns (Goh 2006; Liebman 2005).

4.1 Attempts to govern the Mekong

First attempts at multilateral development of the river were made in the 1950s, after the end of the Indochina War in 1954, which freed Laos, Cambodia, and Vietnam from French colonialism. Immediately after this war, the United States and Western Europe sought to contribute to the economic development of the war-torn area by using the waters of the Mekong River as a source of electricity, irrigation, and transport. This objective also aimed at strengthening the newly independent states against domestic communist insurgencies. These efforts resulted in the formation of the Mekong Committee in 1957, composed of Thailand, South Vietnam, Laos, and Cambodia. China was not invited to participate, and it also did not show any interest because of its domestic economic problems. When Pol Pot came to power in Cambodia in 1975, Cambodia withdrew from the Mekong Committee. In 1979, Thailand, Vietnam,¹³ and Laos formed an Interim Committee (Hirsch and Cheong 1996).

After the end of its civil war, Cambodia joined the Interim Committee in 1991, which led the United Nations Development Program (UNDP) to guide the negotiations to revive the dysfunctional organization. The result of these negotiations was the Mekong River Commission (MRC), formed in 1995 between Thailand, Laos, Cambodia, and Vietnam. The MRC is based on an international treaty with legally binding rules (Browder and Ortolano 2000). Due to differences in interests between countries during the UNDP-led negotiations, the MRC is a weak organization with no ability to punish non-compliance (*Ibid.*).

China, again, was not invited, nor was it interested in joining. By 1995, China had already begun to unilaterally develop the Lancang River. To date, there is only joint dialog

¹³ In 1975, North Vietnam took over South Vietnam to create a unified country under the leadership of the Communist Party of Vietnam.

and the sharing of wet-season data between China and its downstream riparian neighbors. Negotiations between China and the MRC to develop the upstream and downstream Mekong in a cooperative manner have failed. A reason for this failure is that the legally binding provisions in the MRC treaty could put China's unilateral upstream development under international pressure given that the MRC treaty is legally binding. Also, the MRC's request for additional information sharing beyond wet-season data has so far met with staunch refusal, because within China, the sharing of data generated by governmental institutions is still evolving.

Given the ample water resources of Yunnan,¹⁴ China's central government has designated the province an important site of hydropower development. China plans a cascade of eight dams on the Lancang, the so-called Lancang Cascade, which is part of the Western China Development strategy of 1999 (Magee 2006). The plan is to elevate out of poverty the landlocked West through large-scale infrastructure programs (Lai 2002). Currently, three dams are operational (Manwan, Dachaoshan, and Jinghong), while the remaining are under construction or in the planning phase. Concerns about the impact of these Chinese dams led the MRC to assess three different flow regimes and their impact on fisheries, an important source of food and protein in downstream countries, particularly in Cambodia (Mekong River Commission 2006).

The Lancang River is also the site of two of China's key biodiversity hotspots: northwestern Yunnan and southern Yunnan's Xishuangbanna prefecture that borders Myanmar and Laos. The biodiversity hotspot in Xishuangbanna contains endangered plant and animal species (Xu et al. 2004; Kang and He 2007). Parts of the biodiversity protection area were flooded by the Jinghong dam, which became operational in June 2008.

4.2 Regulating biodiversity in China

China's biodiversity protection is governed by a multitude of national laws and international conventions. The most important are the Environmental Impact Assessment (EIA) Law of 2003 and the Convention on Biological Diversity (the Biodiversity Convention) that China ratified in January 1993. In 1996, the Chinese government promulgated the Action Plan for Biodiversity Protection as a requirement of the Convention (Li 1998). China is also a member of the loosely knit Greater Mekong Subregion (GMS), which in contrast to the MRC includes all the Mekong riparians. The GMS is not based on a founding document, but on a number of non-binding bilateral and multilateral agreements. As a result, central government interest and domestic pressure are necessary to enforce domestic compliance of GMS agreements (Hensengerth 2010).

Although an economic cooperation mechanism, since 2006, the GMS has had a Core Environment Program. It includes a biodiversity project, which established several biodiversity protection corridors. Of these, the Mekong Headwaters Biodiversity Corridor covers the Mekong in Yunnan, Laos, and Myanmar. The corridor falls into several geographical parts, of which Xishuangbanna prefecture is the pilot project site.¹⁵ The following analysis focuses on two prefectures in the Corridor: Xishuangbanna in the south and Diqing in the northwest.

¹⁴ Apart from the Mekong, the other rivers in Yunnan province with hydropower stations in construction or planning phases are the Nu/Salween and Jinsha rivers.

¹⁵ The other areas in China are the prefectures Diqing, Nujiang, Dali, Baoshan, and Lincang, plus Simao district under the Pu'er prefecture.

In Xishuangbanna, the Mekong Headwaters Biodiversity Corridor is traversed by the South–North Economic Corridor that is characterized by road and dam construction. The GMS Core Environment Program provides for a Strategic Environmental Assessment (SEA) for the construction of the Economic Corridor. Yet, there is no mechanism that enforces compliance. Accordingly, the Scoping Report complains that mitigation efforts in Xishuangbanna are isolated, site specific, and do not take into account environmental cross-border effects (ADB 2008: 68). Site-specific work is precisely the problem: Yunnan’s environmental DNGOs do not work in large geographically connected areas, but through governmental supervision that confines them to small localities that generally do not influence construction of infrastructure such as roads and hydroelectric dams. This makes effective mitigation for large construction projects difficult.

Around 2005, the Yunnan Environmental Protection Bureau under the guidance of the State Environmental Protection Agency (now the Ministry of Environmental Protection) compiled a report to assess Yunnan’s environmental performance in the Biodiversity Corridor. The report states that although biodiversity laws had been in place for more than a decade, in Yunnan “inspections of wildlife and compliance with the existing biodiversity legislation did not begin until 2003” (Yunnan Environmental Protection Bureau and United Nations Environment Programme, no date [2005 or 2006]: 15). Given the late start, current inventories of threatened species are incomplete. Therefore, there is “a strong likelihood that the global share of Yunnan Province’s threatened species will rise when fish species are included or if a more comprehensive analysis of threatened species had be [*sic*] conducted” (*Ibid.*).

The report does not explain why compliance with biodiversity legislation begins in 2003. The most likely reason is that it is connected to the seminal passing of the EIA Law. With the coming into force of the Law on 1 September 2003, SEA became the standard environmental appraisal practice in China, at least formally. The Law has since been used by the Ministry of Environmental Protection to suspend construction projects and by citizens and DNGOs to protest against polluting enterprises. With the inclusion of SEA in environmental appraisal procedures, China fell in line with international practice (Che et al. 2002; Zhu and Ru 2007). The Law was followed by the *Provisional Measures for Public Participation in EIA* in 2006, the *Environmental Impact Disclosure Measures* in 2008 (Qin 2008), and the *Regulations for Planning Environmental Impact Assessment* in 2009.

While themselves a result of a number of specific DNGO and citizen protests against polluting enterprises and corruption that were widely publicized in the Chinese media (Interview B20122008),¹⁶ these laws and regulations have widened the space within which DNGOs can act. However, it has to be noted that interpretation of the laws by governmental authorities is highly personal and the outcome of legal proceedings, for instance in the case of DNGO registration, is difficult to predict (Gough 2004). Nevertheless, DNGOs have found ways to make their voice heard and means to implement their ideas.

4.3 Tools and channels available to DNGOs and policy entrepreneurs to enforce compliance

There are two main ways in which DNGOs have improved the government’s system of environmental management. First, local governments are not interested in implementing or

¹⁶ Note on Sengserth’s interviews in China: given the politically sensitive nature of the issue, all interviews are encoded. The letter abbreviates the location, the numbers show the date.

complying with national environmental legislation, because the consequences are seen as reduced industrial activity and therefore a decline in tax revenue (Economy 2004). China's political system has been described as fragmented authoritarianism (Lieberthal and Lampton 1992), in which local governments have gained considerable decision-making powers. As a result, central government agencies find it difficult to exercise power over local governments. Second, given the limited resources of local governments, they often enlist the help of DNGOs to carry out biodiversity protection work. DNGOs "help" local governments, thereby applying their specialist local knowledge. The tools that Chinese DNGOs and policy entrepreneurs use comprise of awareness campaigns, leafleting, news media publications, photo exhibitions, suggestions to local governments for project-based cooperation, and lobbying. In Yunnan, the most prolific environmental DNGOs are the Center for Biodiversity and Indigenous Knowledge, Green Watershed led by policy entrepreneur Yu Xiaogang, and Shan Shui.

The work of the Center for Biodiversity and Indigenous Knowledge (CBIK) includes protecting ethnic minorities' traditional knowledge, preserving traditional plant varieties, and rediscovering natural pesticides and medicinal herbs to protect forest and water resources.¹⁷ To increase its specialist knowledge, CBIK is a member of the international network M-POWER (Mekong Program on Water Environment and Resilience), which consists of regional NGOs and research institutes. Typically, CBIK approaches local governments, normally on prefecture level, with an idea for a project and international funding. When accepted, the prefecture government introduces CBIK to the county government under its jurisdiction and the county's Environmental Protection Bureau. The latter then selects the project sites (Interview K05012009).

This process is particularly visible in CBIK projects on ecological agriculture. One of them, on Watershed Governance in the Mekong River Watershed, targeted the Nan-a watershed in Xishuangbanna, a sub-system of the Mekong watershed.¹⁸ In the Nan-a watershed, rubber plantations, conversion of forest to tea plantations, mining, and overuse of pesticides and fertilizer have led to pollution of the river with detrimental effects on people along the downstream sections. To implement this and continuing projects, CBIK has worked with the Agriculture Bureau in Jinghong in the Xishuangbanna prefecture to introduce ecological agriculture including the use of natural fertilizers and pesticides. CBIK's work with local communities in the project sites provides knowledge about ecological agriculture and necessary technologies. It also establishes a multi-stakeholder mechanism between local communities and local governments, and it sets up a marketing mechanism to sell the produce (Interview K05012009).¹⁹

Although rare, some environmental DNGOs in China are more aggressive. The most famous of them in Yunnan is Green Watershed. Like CBIK, Green Watershed is also a member of the M-POWER network. Its aim is the creation of participatory watershed management through advocacy, which is still a unique approach in China. Green Watershed and its head Yu Xiaogang have been under intense scrutiny by the provincial

¹⁷ On ethnic minorities and biodiversity see, for example, Wang and Gu (2009).

¹⁸ It is also located in Deqin county of Diqing prefecture in the northern part of the Mekong Headwaters Biodiversity Corridor. Deqin county is part of the UNESCO World Heritage of the Three Parallel Rivers Nu, Lancang, and Jinsha.

¹⁹ This marketing mechanism includes an application for certification according to the Food Quality Safety Market Access System (QS System) that is implemented by the central government's General Administration for Quality Supervision, Inspection and Quarantine: Interview K05012009.

government since their unparalleled success in delaying by five years construction of the thirteen-dam cascade on the Nu River in 2003 (Mertha 2008).

Green Watershed's direct and indirect relations with the media, policy entrepreneurs, academics in and outside Yunnan University, with members in the National People's Congress and the Chinese People's Political Consultative Conference (notably Liang Congjie), and its active involvement in affected communities, make it a formidable adversary to dam construction plans by the governments in Kunming and Beijing.

Green Watershed's major tools are workshops with affected people to explain the dangers of dams and the impact on their livelihoods in order to increase public awareness about current dam-related legislation and people's rights of access to information, training on sustainable water management, translation of foreign language reports, production of leaflets, and lobbying the Yunnan government to implement community participation in water construction projects. In addition, Green Watershed focuses on capacity building and organizational skills for village communities to manage their environmental resources and to understand their legal rights vis-à-vis the central, provincial, and local governments.²⁰

These tools have been applied since 2002, when Yu Xiaogang wrote a report on the social impacts of the Manwan dam on the Lancang River and argued for participatory social impact assessment. The report was endorsed by then Prime Minister Zhu Rongji, who ordered the Yunnan government to tackle the problem and pay 70 million Yuan (US\$8.7 million) in additional resettlement funds to the impoverished resettlers. Yu Xiaogang has since used the Manwan example to educate other communities targeted for resettlement about their participation rights and the social impacts of poorly handled resettlement (Pasternack 2008; Yardley 2005).

The Manwan problem did not go away, however. In 2004, during Green Watershed's campaign against the dams on the Nu River, Yu Xiaogang drove fourteen future resettlers from Xiaoshaba village near Liuku, the first proposed dam site at the Nu River, to the resettlement sites of the Manwan dam, where many people were living as scavengers (Yardley 2005). Green Watershed also studied the Manwan, Dachaoshan, and Xiaowan dam sites at the Lancang to assess the social and environmental impacts and the dimensions of corruption and embezzlement of resettlement funds. Based on their research findings, Green Watershed began advocating by producing and submitting a report to the Yunnan government in an effort to prevent mismanagement and the destruction of communities and environmental degradation for future dams. The local government's hostile response was to attempt to shut down Green Watershed, but it could not prevent the campaign against the Nu dams from reaching the central government via media campaigns, a photo exhibition in Beijing, and Liang Congjie's influence in the Chinese People's Political Consultative Conference (Mertha 2008).

These actions led to the first ever application of the new EIA Law and a delay in construction. However, having faced a threatened shutdown, Yu Xiaogang and his staff have made a conscious effort to ensure that the government in Kunming can only interpret their actions as strictly within the confines of the law and Green Watershed's charter. According to Yu Xiaogang, Green Watershed regards connections to local communities and to the mass media as decisive tools to effectively translate research findings into advocacy and policy changes, and to observe implementation of and compliance with environmental legislation (Yu 2004; *China Development Brief* 2005).

Occupying a place between the aggressiveness of Green Watershed and the cooperative attitude of CBIK is the DNGO Shan Shui Conservation Center. Headed by Lü Zhi, a

²⁰ See also Xue et al. (2007) citing Klok and Zhang (2008: 55).

conservation biologist, the organization's headquarters are strategically located at Beijing University, an elite university famous for its links to the government. Shan Shui is not confrontational but has high-level contacts, most importantly Mao Rubai, Chairman of the National People's Congress Environment and Resources Protection Committee (Interview B27112008). The immediate political connection is that Mao Rubai is simultaneously a professor at Beijing University and General Director of the University's Center for Nature and Society, where Lü Zhi is Executive Director. While Mao Rubai is not actively involved in the work of Shan Shui, he provides direct access to politicians, and therefore, an environment in which Shan Shui can work undisturbed. Although headquartered in Beijing, Shan Shui works in western China. As a result of this two-tiered structure, Shan Shui is able to accomplish what most environmental DNGOs are not able to accomplish: maintaining a location in the capital to lobby for their work in the provinces (Interview B27112008).

Perhaps its most far-reaching success was to persuade Yunnan's government to found the Yunnan Green Environment Development Foundation in 2008, in cooperation with Yunnan's Forestry Department and The Nature Conservancy. The Foundation's goal is to make money available to local organizations to help preserve animal and plant species that are near extinction through a widening of research, training, field surveys, and monitoring activities. Anticipated work programs include Shan Shui's project area of Deqin county's Meili Snow Mountains, which are situated between the Lancang and Nu Rivers. The area lies within the Three Parallel Rivers UNESCO World Heritage in the northern part of the Mekong Headwaters Biodiversity Corridor (*China Daily* 2009).

In Xishuangbanna, Shan Shui has successfully linked with the Xishuangbanna Tropical Botanical Garden of the Chinese Academy of Sciences in February 2009. The aim of the collaboration is to enhance communication and information exchange between relevant departments in the provincial government in order to coordinate their often overlapping actions and reduce governmental infighting. Furthermore, the cooperation is set to improve communication between the government, DNGOs, and research institutions. In addition, Shan Shui attempts to conduct awareness raising campaigns in local communities to enhance public sensitivity to environmental protection.

4.4 The effects of China's DNGOs and policy entrepreneurs

Perhaps the most important mitigation effort by Chinese DNGOs is the protection of fish, which requires high water quality and biological diversity in fish species through protection of the watershed. Yunnan's DNGOs do their share for the protection of the watershed through the introduction of ecological agriculture, reduction in logging through alternative means of income, opposition to dams, and protection of wildlife in areas that are traversed by major rivers. In 2006, the Xishuangbanna prefecture government's Environmental Protection Bureau forbade fishing in the Mekong during fish breeding cycles to protect fish varieties that are important for local fishing communities. Illegal fishing, however, is common and the local government is unable to enforce the measure (Interview K05012009).

In response to changes in government policy, public perception, and greater local awareness of environmental issues, in a public relations move, Huaneng Corporation (which is constructing the Nuozhadu dam on the Lancang)²¹ has emphasized that to

²¹ Construction started in 2006, operation is expected in 2017.

mitigate the effect of the dam on fisheries, a nature reserve for fish will be set up, and the reservoir's temperature will be controlled through multi-level water intake (*China Economic Net* 2008). However, research in China on temperature control devices in dam reservoirs is still in its infant stage, and not much is known about related technologies and its effects on fish habitats (Chen and Zhou 2006, p. 1151, 1153–1154). Sneddon (2006) argues that the lack of knowledge about fish species, their biology, and ecology in the Mekong “is not innocent but rather reflects the prioritization of other water resource development objectives” (p. 201).²²

The expertise of Yunnan's DNGOs is important on three levels: to observe compliance with national legislation (such as the EIA Law), regional cooperation frameworks (such as those of the GMS), and global frameworks (such as the Biodiversity Convention). However, China's DNGOs are only successful if they are not perceived as interfering with government water construction projects. Indeed, Yunnan's Governor Qin Guangrong argued that DNGOs may only “communicate and cooperate on environmental and biological diversity protection” with provincial and local governments in Yunnan (*Xinhua* 2008). Consequently, they mostly deal with non-controversial projects. Green Watershed is an exception to this rule, but the organization is relatively protected: Yu Xiaogang has not only good connections to media and politicians, but he has revolutionary credentials. It is especially the latter which makes it very difficult to touch him (Mertha 2008, p. 144). Shan Shui, meanwhile, works quietly using its high-profile political links that Beijing University provides. When lacking these links, DNGOs particularly in the politically sensitive environmental sector have to operate under intense governmental observation since environmental pollution has by now become a hotbed of popular discontent.

5 Conclusion

This study has shown that DNGOs and policy entrepreneurs in hydro-hegemonic riparian states can influence the behavior of their governments and work toward achieving what years of international negotiations failed to accomplish. The argument was evidenced in the case of the Ganges River as it is shared between India and Bangladesh. Although the riparians have not addressed the degradation of their shared river in bilateral negotiations because of India's insistence of keeping water quality out of the negotiations, domestic pressure from environmental DNGOs led the Indian government to clean the river. DNGOs and policy entrepreneurs have successfully used the court system to compel government agencies and industries to comply with existing legislation. Through the collection and dissemination of data, these environmental activists, such as Eco Friends and the Sankat Mochan Foundation, used the media to pressure the government to alter its behavior and clean the river. Public awareness campaigns were also used to educate society about changes in behavior that can contribute to cleaning the basin. Along with lobbying government officials, environmental activists have performed the role of watchdog to monitor the behavior of civil servants to assure proper implementation and compliance with existing regulations. Indian DNGOs were able to exploit the Ganga's status as a holy river to derive power to influence actors. Even though the river's holy status did not prevent its extensive pollution by the government and industrialists, it has enabled environmental activists to gain the help of Sadhus to pressure the government to comply with existing environmental legislation. The mobilization of citizens to protest against water pollution

²² For similar examples of Lancang dams see *China Daily* (2002).

has also helped to pressure the government into action. The Ganges has yet to carry bathing quality water, but the efforts of environmental DNGOs have nevertheless served to encourage a powerful upstream riparian state to modify its behavior and clean an international river.

Chinese DNGOs have managed to enter the sanctioned discourse of water management mostly when the government is responsive to their agendas. This is the case when DNGOs possess links to the government, such as Shan Shui and Green Watershed, who are linked to the National People's Congress and the Chinese People's Political Consultative Conference, respectively, or when social conflicts have reached an extent that they endanger domestic stability and as a result trigger stronger environmental and participation legislation. The EIA Law and subsequent regulations on participation and information disclosure are results of increased DNGO activity, popular discontent, and enhanced organizational capabilities of individuals and citizen groups. Also, they indicate a rising profile of the Ministry of Environmental Protection in the government that is actively supported by President Hu Jintao and Prime Minister Wen Jiabao.

Despite the variance in the governmental structures of India and China, environmental activists in both states were able to affect domestic policy by using similar tactics. The DNGOs' sophisticated local knowledge, in combination with their presence at the watershed level, and contacts with organizations outside their country have bequeathed them with substantial specialized technical knowledge of the ecological problems within the Ganges and Mekong basins. In both states, the DNGOs effectively transmitted their specialized technical knowledge to relevant actors at the individual, local, and national levels in order to alter government behavior toward environmental protection. Methods used were the education of local communities, the organization of local affected communities to protest government policies, collection of independent data, and compilation of reports that were disseminated to the media and government officials. Environmental DNGOs applied these various approaches in an attempt to set the agenda, direct policy, or compel compliance with existing environmental legislation.

Although there are these similarities between the two cases in this study, differences still remain. Regime type presents a structural constraint that can shape the possible channels of influence and impact what environmental DNGOs can accomplish. Democratic India provides more space for its environmental DNGOs to operate than authoritarian China. This public space includes the possibility of legal action against the government or industrialists for failing to comply with existing environmental legislation, and the ability to use elections. China's authoritarian system means that environmental DNGOs, without protection from higher-ranking government officials, must operate more cautiously and less forcefully.

Thus, as this paper has shown, by considering domestic politics, we can witness attempts to minimize asymmetrical interests and power relations that can be structural impediments to cooperation in international river basins. In this study, environmental DNGOs and policy entrepreneurs do what the weaker downstream states have been unable to do: influence national and local governments of the dominant upstream state to improve water quality and protect biodiversity. These actions can have a positive influence on the rivers' waters that flow through the downstream states. This potential route at mitigating conflict and minimizing regional tension can also be used to address these unidirectional externalities, when the hydro-hegemon is unwilling to accept side payments or issue linkages to address these issues.

Through a consideration of these other venues or forums of interactions, such as state-society relationships, we are able to see progress toward collective goods within these

international basins. Yet, the two issue areas, water quality and biodiversity, important to the environmental activists in this study, are not the primary issues of contention among the riparians in these basins. The primary issue of contention within the Ganges and Mekong basins is the quantitative allocation of these rivers' scarce waters. Nevertheless, water quality and biodiversity issues are still important to consider because as the quantity of water decreases, the quality of the remaining supply becomes ever more important to riparian states.

Moreover, a consideration of the activities of these environmental activists can lead us to conclude that in the long-run these environmentalists may improve transboundary water management, even quantitative disputes, at the basin level. With national governments under pressure from domestic actors to improve national environmental protection legislation and implementation, this would ideally trigger a process in national governments that moves environmental protection from domestic policymaking to international policymaking. Domestic norm changes can therefore be one factor that influences the international behavior of the state in question.

This study introduces questions that can be addressed in future research. For instance, to establish conclusively that environmental activists can in general have a positive impact on the management of international watersheds, we need additional tests of this argument in other cases. Future research can consider if the findings of the paper can be generalized to other cases, such as the Jordan, Nile, and Euphrates Rivers. Research is also needed to examine whether DNGOs have various other tactics that they use to influence older established democracies, such as the United States, versus younger democracies, such as Turkey and India.

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