The Problem with Solutions: Development Failures in Bangladesh and the Interests They Obscure

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Long described as the "largest poorest" country, Bangladesh has been a prime target for massive infusions of foreign aid for decades. Through historical and ethnographic investigation, I document how flood control and agricultural intensification projects underwritten by foreign institutions exacerbate vulnerability to water crises in Bangladesh. These ostensibly pro-poor water governance and economic development programs engender cycles of crop loss, groundwater and soil salinization, reduced fisheries, and impeded navigation that erode agrarian livelihoods, thereby reproducing the conditions and rationale for continued flows of aid dollars into the country. Shifting attention away from depoliticized problems and solutions, I develop the concept of the interest-shed as a broadly applicable method for intervening in cycles of failure by examining the interests that they serve. This framework can also be used in the planning process by enabling differently situated groups to evaluate how proposed schemes include, ignore, or prioritize their interests. *Key Words: Bangladesh, failure, interest-shed, international development, water hazards.*

长久以来，孟加拉国素有"最贫穷大国"之称。近数十年来，其始终是大量外国援助的主要目标。作者根据历史和人种调查，记录了外国机构资助的防洪和农业集约化项目如何加剧了孟加拉国水危机的脆弱性。这些项目表面上有利于扶贫水治理和经济发展，实则使其环境陷入了恶性循环：农作物损失、地下水和土壤盐碱化、渔业减产和航运受阻，侵蚀农业生计，为援助资金继续流入国内创造了条件和依据。作者的关注点不是非政治化问题和解决方案，而是提出通过审视投资所带来的利益点，将利益保护的概念作为一种广泛适用的方法，干预失败循环。本框架也适用于规划的过程，让不同处境群体都能评估提案如何涵盖、忽略或优先考虑其利益。*关键词：孟加拉国，失败，利益保护，国际发展，水害。*

Descrito desde hace tiempo como "el más grande de los países más pobres", durante décadas Bangladesh ha sido un objetivo primordial para infusiones masivas de ayuda externa. A través de investigación histórica y etnográfica, yo documento el modo como proyectos de control de inundaciones e intensificación agrícola patrocinados por instituciones extranjeras hacen más compleja la vulnerabilidad a crisis hidrológicas en Bangladesh. Estos programas, ostensiblemente diseñados en favor del manejo de condiciones de pobreza hídrica y de desarrollo económico, engendran ciclos de pérdida de cosechas, salinización del agua freática y el suelo, reducción de pesqueíras y obstrucciones a la navegación que merman el sustento agrario, replicando de ese modo condiciones y bases para flujos continuados de dólares de ayuda hacia el país. Apartándome de la atención hacia problemas y soluciones despolitizados, desarrollo el concepto de área de interés, como método de amplia aplicación para intervenir en ciclos de fracaso examinando los intereses que ellos sirven. Este marco también puede usarse en el proceso de planificación capacitando grupos situados de manera diferente para evaluar el modo como los esquemas propuestos incluyen, ignoran o priorizan sus intereses. *Palabras clave: área de interés, Bangladesh, desarrollo internacional, fracaso, riesgos del agua.*

Geographers have long found development failures to be fertile conceptual terrain. There is a strong tradition in the field of locating the unintended negative outcomes of often well-intentioned development and environmental management programs (e.g., Barnett and O'Neill 2010; McEvoy and Wilder 2012; Simon and Alagona 2013; Atteridge and Remling 2018). In a complementary vein, many scholars have productively theorized the root causes and drivers of failures in an effort to stanch the social and environmental wounds inflicted by misguided interventions (e.g., Blaikie and Brookfield 1987; Peluso 1993; Ribot 1995; Wisner 2001). Yet another strand of research on failure engages with the work that "failed" solutions accomplish, such as the creation of "new forms

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of local knowledge and practice" (Li 2005, 391), the production of state subjects (Meehan and Molden 2015), and the expansion and deepening of neoliberal logics (Dempsey and Suarez 2016). Much of the scholarship in this last area extends Ferguson's (1990, 1994) generative research examining the "side effects" of development failures and is the point of departure for this study.

Although positing that "what is most important about a 'development' project is not so much about what it fails to do but what it achieves through its 'side effects'" (180), Ferguson (1994) was also quick to caution against any urge to lineally connect development practices (e.g., road construction) with particular ambitions (e.g., "to aid capitalist penetration into Third World countries"). This is prudent advice. Given the frequency and ease with which various authorities continue to render problems and solutions as techno-managerial issues and thereby denude them of their politics, however (Mitchell 2002; Li 2007; Swyngedouw 2011; Zwarteveen and Boelens 2014), there remains an important project of scrutinizing how multifarious interests are articulated, pursued, satisfied, and ignored in the course of identifying problems and solutions (see Bakker 1999). How, then, might we conceptualize and account for the interests that shape development interventions without resorting to overdetermined interpretations of project outcomes? Furthermore, what democratic alternatives emerge from interest-oriented examinations of development?

I approach these questions through a historical political ecology (Davis 2009) of foreign development and water management in Bangladesh from the mid-twentieth century to present day. This mixed-methods case study synthesizes in-person interviews with textual analysis. I draw on meetings in Dhaka with federal water resource managers and engineers, as well as meetings with civil society activists and nongovernmental researchers. I also conducted sixty-five semistructured interviews in western Bangladesh with water users employed in key water-dependent occupations (agriculture, fishing, and boating) to understand their experiences and perceptions regarding occupational uses of water. Through archival research in Bangladesh, I surveyed approximately fifty government reports on Ganges River research and development projects at the library of the River Research Institute. These texts were supplemented by third-party evaluations of international development projects commissioned by the World Bank, U.S. Agency for International Development (USAID), Asian Development Bank, and other aid agencies.

The analysis focuses on the southwestern division of Khulna (Figure 1), the most downstream portion of the Ganges River network and a key site for interconnected interventions aimed at poverty reduction, agricultural expansion and intensification, water hazards mitigation, and climate change adaptation. Through an examination of polders (embanked riverine islands) as "nodes of water conflict" (Sneddon and Fox 2006, 184), I show that development practitioners and resource managers alternately naturalize or externalize water-related crises in Bangladesh.

Such framings are compatible with the *problemshed* approach to water governance, which many academics and practitioners employ as a way to reach beyond an immediate issue area (typically a river basin) for solutions to intractable problems (National Research Council 1966; Allan 2001; Turton and Ashton 2008; Daré et al. 2018). The foreign "solutions" introduced to southwestern Bangladesh, however, not only have failed to ameliorate human vulnerability to water hazards but have perpetuated and exacerbated them for decades. As I demonstrate here, this cycle arises from the ways in which experts naturalize hazards in the region and thereby obscure the interests that are variously pursued, served, and denied in their quest for solutions. I therefore develop the concept of *interestsheds* to politicize complex socioecological problems and identify opportunities for the democratic construction of "egalitarian ecologies" (Swyngedouw 2011, 273).

The Problemshed as an Attempted Corrective to the River Basin

Building the capacity to regulate water flows has long been the focus of development projects aimed at goals such as poverty reduction, hazards mitigation, industrialization, and food production (Mollinga 2008). The uncoordinated development of water resources for these varied purposes, however, has often resulted in competing resource claims between economic sectors and user groups, with insufficient regard given to downstream impacts, ecosystem requirements, social equity, or surface–groundwater connectivity (Molle 2008). Integrated water resources management

Figure 1. Division map of Bangladesh. *Source:* United Nations (2004).

(IWRM) thus emerged in the 1990s as a response to unsystematic water resources development. IWRM is "a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems" (UN Water 2008, 7–8). Although the goals of IWRM seem laudable, many analysts have criticized it for being an unworkable "nirvana concept" (Molle 2008; see also Lankford and Hepworth 2010); for serving other, sometimes antithetical, agendas (Giordano and Shah 2014); and for privileging the river basin or watershed as the optimal scale of governance (Warner, Wester, and Bolding 2008; Norman and Bakker 2009; Orlove and Caton 2010).

Scale has important implications for how water is allocated, water pollution is mitigated, resource claims are adjudicated, and other water management functions are conducted. Given the notorious difficulty of "reconciling political borders and basin boundaries" (Zeitoun, Goulden, and Tickner 2013, 331), much of the appeal of the river basin scale lies in its status as an apparently neutral, hydrogeographical unit. Viewed as a "natural" unit rather than a political one, it ostensibly serves to help rationalize and democratize water management by stressing efficiency, sustainable use, and multistakeholder participation (see UN Water 2008; Norman and Bakker 2009; Zeitoun, Goulden, and Tickner 2013). This insistence on the river basin scale has become hegemonic, effectively foreclosing alternative approaches to water management (Orlove and Caton 2010; Giordano and Shah 2014; Allouche 2016). "Presented as the most appropriate scale for water management, not by human choice but mandated by 'nature,' river basin management acquires an untouchable legitimacy" (Warner, Wester, and Bolding 2008, 134). River basins, however, are in fact difficult to delineate because groundwater basins and surface watersheds rarely align (Warner, Wester, and Bolding 2008; Orlove and Caton 2010). Moreover, resource management occurs across multiple scales and institutional levels, making the choice of the basin scale of management inherently political (Venot et al. 2011; Warner, Wester, and Hoogesteger 2014). That is, the "natural" river basin is a political construct more than it is a physical reality.

The shortcomings of river basins as analytical or management units leave open the question of how to conceptualize the spaces in which hydrosocial relations unfold and water is harnessed for development. The problemshed is one approach that promised to help analysts break out of the "territorial trap" (Agnew 1994; Warner and Zeitoun 2008) of the river basin and resolve the spatial challenges that pervade water governance (Daniell and Barreteau 2014). *Problemsheds* refers to geographic areas that are "large enough to encompass the issues but small enough to make implementation feasible" (Griffin 1999, 509). The concept was popularized in the 1960s as a response to a wide range of refractory environmental problems such as air and water pollution (Fisher 1967). The 2,400-square-mile Blackfoot Challenge of Montana and the 500,000-square-mile Yellowstone to Yukon Conservation Initiative are examples in which problemsheds were delineated for environmental management, in this case to facilitate large landscape conservation (McKinney, Scarlett, and Kemmis 2010).

When applied to water governance, the problemshed approach situates river basins within broader political economic systems to mobilize solutions available beyond the basin. Rather than being confined to regional solutions, the problemshed approach to water scarcity in Egypt and Israel, for instance, entails international transfers of "virtual water" through cheap grain imports (Earle 2003). Problematizing the river basin as a taken-for-granted "conceptual icon of immense material and symbolic value" that overly constrains policy remedies, Allan (2001) identified problemsheds as a fecund source of "readily available and stress-free solutions" to obstinate water problems (32). He explained:

> When the water resources of a watershed become insufficient for the needs of the resident population and their livelihoods, *a political economy has to reach outside the watershed for solutions*. It is in the "problemshed" that solutions can be found. … (Allan 2001, 337, italics added)

Beyond the oft-cited examples of virtual water imports, what solutions have emerged from such an approach? How have they addressed the problems at hand?

The lower catchment of the Ganges River is ideal for assessing the utility of the problemshed concept. This complex river network and predominantly agrarian landscape is characterized by high population density, pervasive poverty, and vulnerability to environmental hazards and has been the site of decades of development interventions aimed at regulating water flows and stabilizing agrarian systems. Here and elsewhere, water governance challenges are becoming increasingly "wicked" (Warner, Wester, and Bolding 2008; Finewood and Holifield 2015), as climate change and the growing misuse and appropriation of water (Molle and Mollinga 2003; Franco, Mehta, and Veldwisch 2013) leave more people suffering from and for water (Sultana 2011; Mekonnen and Hoekstra 2016). There is thus a pressing need to identify robust and generalizable spatial concepts for analyzing how problems are defined, causes are identified, and solutions are implemented.

This analysis attends to this need through the development of the interest-shed, which pivots analytical focus away from problems toward the interests that coalesce around them. Such reorientation, I argue, is necessary for recovering the politics that permeate the problem-solving process. In other words, to follow interests, to adopt Taylor's (2014) approach to climate change adaptation, is to "de-frame [the problem] to render visible its embedded assumptions and contradictions" (xiii). I begin with a historical political ecology of the Bangladesh water management system to chronicle whose interests were privileged or sidelined during successive water-related crises in the country. This discussion highlights how a narrow focus on problems has perpetuated failures and lays the foundation for the subsequent formulation and visualization of the interest-shed.

The Hydro-Hazardscape of Bangladesh

Approximately 80 percent of Bangladesh's total land area is floodplain. Normal floods, known locally as *borsha*, inundate one fifth to one third of the country annually (Hofer and Messerli 2006; Chowdhury 2010). Social and economic life have been organized around these recurring events for centuries (Boyce 1990; Paul 2003). *Bonna* (abnormal floods), however, deviate from standard parameters of timing, magnitude, areal extent, and duration (Hofer and Messerli 2006). Such events markedly destabilize and threaten people's lives and livelihoods by facilitating disease transmission, disrupting communication and transportation systems, and destroying infrastructure, crops, livestock, and personal property (Krug 1957; Paul 2003).

Despite the substantial disaster potential of floods in Bangladesh, their absence can be equally devastating. Surface freshwater sustains agriculture, industries, and human life. It is also essential for healthy fisheries, groundwater replenishment, inland navigation, and mangrove forests that protect coasts from erosion and tropical storms (Mirza and Ericksen 1996; Paul 2003; Hofer and Messerli 2006). Drought conditions pose additional perils in coastal areas where tidally influenced rivers contaminate water and soil with salts that render water nonpotable and land toxic to plants. Seawater intrusion peaks during high spring tides, as well as during the dry season when river flows are too meager to stem the influx of estuarine water (Chowdhury 2010).

The Matter of Embankments

Embankments are conspicuous features of southwestern Bangladesh that serve diverse functions beyond their intended purpose of isolating land from the surrounding hydrological regime (Segeren 1983). The earthen dikes are contested, multiuse spaces coopted for rural traffic and unregulated housing for the landless, and the areas they cordon off from riverine and tidal flows have created, to borrow Mustafa's (2013) term, a unique and complex "hydro-hazardscape." Embankments are therefore ideal for examination as "nodes of water conflict" and for identifying "the multiple networks of political-economic, discursive and ecohydrologic processes intermingling with these nodes, that fall outside or under the fixed scale of the transnational basin" (Sneddon and Fox 2006, 184). Consistent with a problemshed approach, actors beyond the Ganges basin have been enormously influential in shaping the institutions, policies, and structural interventions aimed at mitigating hydrological hazards in Bangladesh. Their continued involvement in water management and planning in the face of repeated failures to meet their programmatic objectives, however, raises serious questions about the interests being served by foreign interventions in Bangladesh.

The Era of Flood Control

Each decade since the 1947 Partition of India marked a new phase in national and regional policies aimed at controlling the circulation and distribution of freshwater in East Pakistan, later Bangladesh. Each phase in turn bears the mark of a problemshed approach by being unambiguously shaped by outside "solutions." Starting in the mid-1950s, catastrophic floods precipitated the first formal attempts at water resource planning in East Pakistan, when the government of Pakistan enlisted

Figure 2. A polder in Khulna, Bangladesh, separates a village (right) from a distributary of the Ganges River (left). *Source:* Photo by Jonathan Gilligan.

the United Nations (UN) to conduct a Technical Assistance Mission (Krug 1957; Ali 2002). Leading the mission was Julius Albert Krug (formerly a power engineer for the Tennessee Valley Authority and head of the U.S. Army Corps of Engineers), who recommended the creation of a centralized state bureaucracy to address water and power development in East Pakistan (see Crawford 1969).

Following this counsel, the government of Pakistan established the East Pakistan Water and Power Development Authority (EWAPDA) in 1959. Despite the role of floods in catalyzing UN involvement in East Pakistan, annual shortfalls in food and burgeoning Green Revolution technologies led experts to prioritize food production over hazards mitigation (USAID 1970; Thompson and Sultana 1996). Therefore, EWAPDA commissioned a series of large-scale flood control, drainage, and irrigation projects that would provide maximum protection to cropland from flood damage (Hussain 2004; Chowdhury 2010). These projects spanned a range of engineering interventions based on guidance from the Krug Mission, including dams, embankments, barrages, and canals. One structural form implemented in the coastal regions would have an inordinate impact on the socioecological system of southwestern Bangladesh, though: the Dutch polder.

The 1957 UN Mission included seven U.S., Dutch, and British hydraulic engineers and economists. Recognizing superficial similarities between the alluvial floodplains of The Netherlands and Bangladesh, the team recommended the erection of polders (permanent, ringed embankments used extensively in The Netherlands) to seal off swaths of land from riverine flows and prevent flooding and seawater intrusion (Segeren 1983; Figure 2). The team observed that residents already practiced embankment construction (Krug 1957). In recommending permanent embankments, though, it failed to recognize the difference between the northern temperate climate of The Netherlands and the monsoon-driven climate of South Asia, the difference between essential *borsha* and damaging *bonna* floods, and the existing embankments' seasonal construction and use.

From the seventeenth century, powerful landlords commissioned temporary earthen embankments to exclude saline water and thereby protect arable land during the dry season (Pitman 2005). During the rainy season, however, freshwater was sufficient to flush tidal channels and press the salinity front shoreward. Therefore, at the onset of the monsoon, the dikes were dismantled to allow freshwater to inundate the land and thus enable rice cropping during both the dry and wet seasons (Pitman 2005; Nowreen, Jalal, and Khan 2014). This practice continued until 1951 and has since been replaced by the permanent, Dutch-style polders endorsed by the UN Mission. In 1961, the government of Pakistan launched a series of massive engineering works including the large-scale introduction of polders to the southwest region (J. W. Thomas 1972; Government of Bangladesh 2001; Pitman 2005). Through the Coastal Embankment Project, a total of

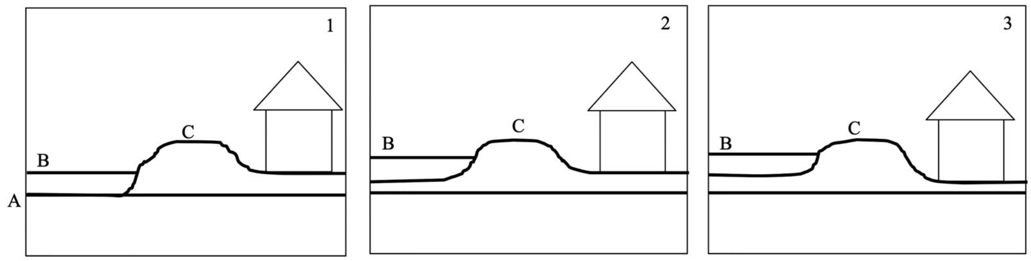

Figure 3. Cross-sectional view of the area inside (right) and outside (left) of a polder over time. The line labeled A is a visual guide to assist comparison of landscape features across panels. Panel 1 illustrates the period soon after construction of the embankment. Sediments are gradually deposited within the river channel (Panel 2), thus raising the height of the river (B) relative to the height of the embankment (C). After fifteen to twenty years (Panel 3), the riverbed continues to shoal (in the absence of dredging) and soil compaction within the polder lowers the ground level below the height of the river.

108 polders were erected, compartmentalizing a combined area of 3 million acres occupied by more than 30 million people (J. W. Thomas 1972; Thompson and Sultana 1996).

These works were barely underway when a major flood occurred in 1962, prompting a second UN report, this time authored by U.S. engineer and former President of the Mississippi River Commission (U.S. Army Corps of Engineers) John Ray Hardin. Although Hardin advocated a measured approach to addressing flood risks in East Pakistan, he maintained an overriding faith in the capacity for engineering solutions to prevail in the dynamic landscape, confidently stating, "After a century or more of progress, the art of river engineering has, to a large extent, become a science" (Hardin 1963, 287). Therefore, Hardin's report and EWAPDA's 1964 Master Plan that followed it emphasized large-scale structural measures to mitigate flood damage, including embankments, channel dredging, and drainage canals (Hardin 1963; van Staveren 2017).

By the early 1970s, more than 4,000 km of coastal embankments had been constructed and yielded promising results (USAID 1970). Effective protection from tidal surges and flooding, as well as the introduction of high-yield rice varieties, fostered significant gains in food grain production (up to 200–300 percent; Brammer 1983; Pitman 2005). Within ten to fifteen years, however, these early successes yielded to wide-ranging complaints: waterlogging within the polders, depletion of open freshwater fisheries, sedimentation of river channels, reduced fish diversity, loss of navigable routes, and higher rates of disease transmission (J. W. Thomas 1972; Brammer 1983; Nowreen, Jalal, and Khan 2014). Moreover, many residents discovered that the confinement of floodwaters to river channels paradoxically increased their vulnerability to abnormal floods (Environmental Resources Limited [ERL] 1992; Paul 2003). Despite renewed efforts in the late 1980s and 1990s to rehabilitate damaged embankments and modify polders with drainage canals, improved sluice gates, and low-lift pumps, each round of interventions introduced new problems (Thompson and Sultana 1996; Ali 2002; Pitman 2005). Once celebrated, polders are now denounced as a "man-made disaster" (Nowreen, Jalal, and Khan 2014, 264), "project of mass destruction" (Islam and Kibria 2006), "violent enclosure of common-pool resources" (Warner 2010, 75) and "man-made hazard" (Swapan and Gavin 2011, 47). Attention to flows of water and sediment reveals where this promising solution went wrong. Attention to flows of interests explains why it continues to go wrong.

Troubling Developments

Polders were intended to allow for controlled flooding of land by way of regulators and gravity drainage, thus maintaining the positive benefits of floodwaters, circumventing crop and property damage (Mirza and Ericksen 1996; Figure 3, left).[1] In theory, sluice gates could be opened during the rainy season to allow accumulated water to drain off the land or closed during the dry season to avert saline intrusion and tidal flooding (Mirza and Ericksen 1996; Ali 2002; Nowreen, Jalal, and Khan 2014). In effect, polders channelized the rivers and forced sediments to be deposited in the riverbeds, thereby reducing the carrying capacity of the rivers, increasing the river height relative to the embankments, and ultimately augmenting the risk of overtopping (Brammer 1983; Swapan and Gavin 2011; Figure 3, center). This is precisely what one farmer experienced during major cyclones in 2007 and 2009: "Floods caused by Sidr and Aila affected us who live by the river. The water level rose over the height of the WAPDA embankment, and our homes and lands were drowned in a second" (interview, March 2014, farmer in Khulna).

Compounding these problems, sluice gates and drainage canals quickly became inoperable due to poor maintenance and rapid sedimentation (Nowreen, Jalal, and Khan 2014). By blocking floodwaters, clogged gates prevented new silt from being deposited within empoldered areas; the resultant soil mining and compaction led to 1.0 to 1.5 m of elevation loss that has left the land dangerously below river height (Swapan and Gavin 2011; Auerbach et al. 2015; Figure 3, right). In addition to exacerbating flood risk, the congested drainage canals and disparity in land levels prevented rainwater (during monsoon season) and saline water (during tidal floods and storm surges) from draining out of the polder (ERL 1992; Government of Bangladesh 2001). Disastrous waterlogging ensued and persisted for months, and the stagnant waters became rife with hazards (Brammer 1983; Swapan and Gavin 2011). Residents lament these ongoing dynamics: "When it rains heavily in monsoon and the water cannot escape from the lowlands, then lowland paddy gets ruined" (interview, March 2014, fisherman in Khulna).

Gangetic floodwaters are naturally rich in blue-green algae that convert abundant atmospheric nitrogen (N_2) into ammonium (NH_4^+), a limiting factor in plant growth and a compound critical to soil fertility (Krug 1957; Brammer 1983). The exclusion of these soil-enhancing microbes and the saturation of soil with saline water severely reduced the land's productive potential. In addition to destroying crops and damaging property, the standing water elevated the incidence and transmission of malaria, dengue, cholera, dysentery, and diarrheal diseases (Ali 2002; Nowreen, Jalal, and Khan 2014). Moreover, 60 percent of Bangladesh's 251 species of fish are floodplain dependent and 77 percent of fish are wild-caught from inland freshwater fisheries (Zaman 1993). Fish provide 60 to 80 percent of Bangladeshis' dietary protein and are a vital food source for the landless poor (Boyce 1990; ERL 1992). Diverse fish populations that had once been abundant in coastal rivers, low-lying depressions, and oxbow lakes were decimated by reduced habitat or by impeded access to spawning grounds as a direct result of embankments (Boyce 1990; C. Haque and Zaman 1993; Ali 2002). In addition to decimating freshwater fisheries, compartmentalization severely impacted the communication and transportation systems built around the river network. Water-based transport is vital in rural areas where country boats provide affordable, efficient transit for people and goods (ERL 1992; Chowdhury 2010). Polders, however, rendered numerous channels nonnavigable, threatening this critical form of transportation and the regional economies that rely on it (Mirza and Ericksen 1996; Thompson and Sultana 1996). Faced with increasingly sterile land, significantly fewer fish, and diminished transportation, many people abandoned their homes and land in search of employment in urban areas (ERL 1992; Nowreen, Jalal, and Khan 2014).

Reinventing Polders

Not everyone adversely affected by the polders relocated; many who stayed resisted by making illegal cuts into the embankments to either drain waterlogged land or to allow entry of normal flood water that had been excluded by the structures (Pitman 2005; Nowreen, Jalal, and Khan 2014). Although such breaches provided temporary relief, they resulted in the long-term risk of structural failure during cyclones and storm surges (Brammer 2010; Kartiki 2011). Moreover, the cuts facilitated seawater intrusion during the dry season, thereby introducing additional risk of soil and water salinization. In addition to failing to meet expected targets for poverty reduction, food self-sufficiency, and hazards protection, polders became inundated with brackish water during even moderate storm surges. This had the unintended effect of creating an ideal habitat for the intensive cultivation of tiger shrimp (*Penaeus monodon*; Brammer 2010; Swapan and Gavin 2011).

Bangladesh made its entry into the global shrimp export market in the 1980s when social and environmental failures decimated aquaculture production in already established seafood-exporting countries, including Thailand, Indonesia, and China (Azad, Jensen, and Lin 2009). Over the following three decades, shrimp farming catapulted from an artisanal practice for domestic consumption into Bangladesh's second largest foreign income generator after ready-made garments. Today, Bangladesh's annual production of 60,000 to 75,000 tons of shrimp on more than 216,000 ha of land directly employs approximately 1.2 million people, and an additional 4.8 million are indirectly dependent on the industry (Environmental Justice Foundation [EJF] 2014; Akber et al. 2017). Such figures suggest that Bangladesh will achieve its goal of middle-income status by 2021. They also, however, obfuscate profound socioecological costs borne by the sector's growth and success.

Government policies helped promote the expansion in shrimp farming, but the industry's frenzied growth was primarily executed in an unregulated and uncoordinated fashion, including the forcible seizure and conversion of agricultural land to shrimp ponds within the polders (Azad, Jensen, and Lin 2009; Adnan 2013; EJF 2014). Uneven rural power structures privilege wealthy and politically connected individuals, who regulate water salinity within the polders for their own benefit by taking control of sluice gates or making cuts in embankments (see Hussain 2004; Warner 2010). As one informant explained, "The river is embanked and sluice gates are being controlled by shrimp farmers. Once we complained to the TNO (municipal government official), but that was of no use. The shrimp farmers are influential people" (interview, March 2014, farmer in Khulna). Another resident described the power asymmetry in more potent terms: "The gate functions by dictatorship" (interview, March 2014, fisherman in Khulna). Thus, polders that had been constructed in part to exclude saline water were now repurposed to create brackish environments for shrimp cultivation.

Areas that once supported the production of rice, jute, fruit trees, vegetables, fish, cattle, and poultry were rendered sterile by the unilateral salinization of soil and water for shrimp production (Rahman, Lund, and Bryceson 2011). Moreover, salt water from shrimp ponds easily infiltrates adjacent fields, forcing neighboring farmers of means to adopt shrimp cultivation themselves and further perpetuate the destruction of land and livelihoods (Kartiki 2011). For those who can engage in it, shrimp farming is one of the most lucrative professions in Bangladesh, generating ten times the income of rice farming (Rahman, Lund, and Bryceson 2011). Its additional attributes of being capital intensive and requiring minimal labor, however, make entry prohibitive for poor farmers, simultaneously generating little viable employment (Kartiki 2011; Swapan and Gavin 2011; EJF 2014). Although some residents transition to shrimp farming voluntarily or through circumstance (as earlier), more often shrimp farm operators are industrialists from outside the region (Adnan 2013; EJF 2014).

The radical transformation of Bangladesh's coastal landscape has not been an inevitable or peaceful process. Wealthy urbanites often acquire property illegally through intimidation, coercion, harassment, and forced inundation of fields with the assistance of hired thugs and corrupt law enforcement and government officials (Swapan and Gavin 2011; EJF 2014). The situation is bleak for non-shrimp-farming residents, one of whom explained, "Saline water is invading through the sluice gate of the WAPDA embankment. Most of the people are suffering [while] a few musclemen are benefiting" (interview, March 2014, Khulna resident). Livelihood and subsistence options are further circumscribed by federal land policies that give nominal priority to peasants while in practice effecting land privatization for the benefit of closed-water aquaculture (Adnan 2013). Shrimp production has skyrocketed, but 97 percent of the valuable seafood is exported abroad rather than compensating for diminished open-water fish harvests (Ali 2002). The overall result is widespread depeasantization of the coastal zone: Most low- and middle-income individuals migrate to urban areas in search of work, and those who stay become seasonal, low-wage laborers in the shrimp industry (Swapan and Gavin 2011; Paprocki and Cons 2014).

Interest in/and Aid

The plight of Bangladeshis has not gone unnoticed. Poverty, high unemployment, food insufficiency, and growing threats of climate change have captured global attention as new foci for problemshed-oriented approaches, with much of the international response taking the form of development aid programs. Consequently, Bangladesh has received over US$66 billion in foreign aid since gaining independence from Pakistan in 1971, with over US$6 billion sourced from USAID alone (USAID 2016; World Bank 2017). Vast sums of foreign aid continue to flow into the country, with recent commitments by the World Bank, The Netherlands, and the United States approaching US$3.5 billion ("USAID Pledges to Spend $922m

Table 1. Overview of some past and current water management projects in Bangladesh

Project (purpose)	Funding agency	Project dates	Project cost (US$)	Internal evaluation
Coastal Embankment Project (construct polders)	USAID	1960–1971	278 million	"The project actually diminished rather than enhanced the farmers' productive capacity" (J. W. Thomas 1972, 41).
Flood Action Plan 20 (construct and test polders)	Government of The Netherlands	1990–2000	27.9 million	"In brief, the technical feasibility of the entire FAP concept is not demonstrated and projects involving large-scale embankments must be considered out of reach at this time" (Netherlands Development Corporation 1993, 5).
Coastal Embankment Rehabilitation Project (repair polders)	World Bank	1995–2002	87.8 million	"The project partially achieved its objectives with several shortcomings and the outcome is rated as moderately satisfactory. … Sustainability is rated as unlikely" (Pitman 2005, ix).
Khulna-Jessore Drainage Rehabilitation Project (improve polder drainage)	Asian Development Bank	1994–2004	44.9 million	"The Project was rated as unsuccessful, bordering on partly successful. It was rated as partly relevant, less effective, inefficient, and unlikely sustainable" (Asian Development Bank 2007).
Poverty Reduction by Increasing the Competitiveness of Enterprises (expand aquaculture)	USAID	2008–2013	12.9 million	PRICE increased "sales in aquaculture" (Optimal Solutions Group 2014, viii) and "demand [for shrimp] by linking processors with new customers from the United Arab Emirates and Saudi Arabia and expanding within the European market" (Optimal Solutions Group 2014, 17).
Blue Gold (enhance flood protection and agricultural productivity in polders)	Government of The Netherlands	2013–2019	80 million	"There is no evidence of concrete improvements in terms of local water management" (Kessler et al. 2017, 23).
Coastal Embankment Improvement Project	World Bank	2013–2020	400 million	N/A (active); Purpose: Rehabilitate 600 km of coastal polders (Mahbub 2013).

Notes: USAID = U.S. Agency for International Development; FAP = Flood Action Plan; PRICE = Poverty Reduction by Increasing the Competitiveness of Enterprises.

by 2016" 2012; Mahbub 2013; World Bank 2016). Some of the flood control projects described earlier are summarized in Table 1, including excerpts from agency evaluations of completed projects.

It has long been the case that economic and environmental crises in Bangladesh provide rich prospects for the international development industry, and water management has been an especially profitable sector (J. W. Thomas 1972; Boyce 1990; Hofer and Messerli 2006; M. Haque 2014). One USAID report identified that nearly one third of the total foreign development aid in the year 1967–1968 went to the Bangladesh water sector, whereas 15 to 20 percent of those funds were directed right back out of the country to pay for foreign consultants (J. W. Thomas 1972). A brief discussion of a few of the development projects listed in Table 1 illustrates what is at stake for aid industry involvement in Bangladesh's hydro-hazardscape.

Coastal Embankment Project

For ten years of consulting (1962–1971) on the ill-fated Coastal Embankment Project, the San Francisco–based firm Leedshill de Leeuw Engineers furnished Bangladesh with seventeen experts for a sum of US$3 million, funded by USAID loans (J. W. Thomas 1972). Embankment construction itself was a food-for-work operation funded through Public Law 480 (PL-480), the U.S. Food for Peace program that found international outlets for surplus U.S. wheat, rice, edible oil, and cotton (Khalil 1991). Viewed through a problemshed lens, the procurement of outside grains to address food shortages is a logical, even elegant solution, much like the celebratory narratives around virtual water. PL-480 allows cash-strapped, food-deficient countries to pay for U.S. food imports with their local currencies rather than U.S. dollars, but "food aid" was secondary to the program's main objective of reducing agricultural surpluses and insulating U.S. farmers from depressed markets (USAID 1970; U.S. Department of State 2013). Instead, risks were displaced onto the rural peasantry of Bangladesh, who suffered debilitating food price fluctuations as a result of imported foodstuffs (McHenry and Bird 1977). From 1972 to 1990, Bangladesh purchased US$1.77 billion of surplus agricultural commodities and continues to be a target of PL-480 programs (Khalil 1991; U.S. Department of Agriculture 2016).

USAID loans for the Coastal Embankment Project not only charged interest, mandated the employment of U.S. engineering consultants, and relieved U.S. farmers of excess grain but also required "all material, equipment and services" for the project to be procured in the United States (USAID 1970, 90). Such stipulations have become the industry standard, elaborated since the 1990s to include payment for material suppliers, contractors, and consultants prior to complete or proper installation of works (M. Haque 2014). The Blue Gold project is one contemporary example.

Blue Gold

Euroconsult Mott MacDonald, the Dutch consulting firm for Flood Action Plan 20 (FAP-20), is now leading the technical assistance team for a Dutch-funded program in southwestern Bangladesh fetchingly called Blue Gold (Table 1). Although FAP-20 was not sited in southwestern Bangladesh, it was an important pilot project for testing the feasibility of establishing polders elsewhere in the country (Netherlands Development Corporation 1993; Warner 2010). Despite the conclusion that FAP-20 was "neither replicable nor sustainable" (Warner 2010, 77), the Blue Gold program also centers on polder construction and maintenance, ostensibly for improved water management and increased agricultural productivity.

The labor source for polder construction ironically includes many of those displaced by earlier embankment projects. First conceived in 1987 and promoted by the government of The Netherlands as a mechanism for poverty alleviation and community participation, landless contracting societies (LCSs) are groups of the landless poor who are contracted to construct and maintain embankments (Dewan 2012). The Blue Gold program mandates that LCSs (mostly women) must complete 50 percent of earthwork construction "so that employment and income generating activities are provided to the poor sections of the community" (Blue Gold 2012, 40). In other words, foreign-devised water management projects employ landless and disaster-affected people to rehabilitate and maintain the very structures that perpetuate their vulnerable status.

Polders might not protect residents from water hazards or food insecurity, but they do ensure a reliable source of shrimp for U.S. and European consumers. The United States and The Netherlands are the top importers of Bangladeshi shrimp, with Americans consuming an average of four pounds of shrimp per person each year (EJF 2014). To facilitate this trade, foreign loans for shrimp cultivation programs, like the U.S. Poverty Reduction by Increasing the Competitiveness of Enterprises (PRICE) and the Dutch Sustainable Agriculture, Food Security and Linkages programs, are disbursed on condition that Bangladesh adopt liberal trade policies that benefit importers.

Similarly, although foreign donors tout shrimp farming as a mechanism for poverty alleviation and job creation (ERL 1992; Blue Gold 2012; Optimal Solutions Group 2014), the government of The Netherlands and U.S. Department of Agriculture are actively working to streamline the production process to improve shrimp export quality. The process includes the "introduction of (small-scale) mechanisation [that] will *alleviate labour work*" (Blue Gold 2012, 7, italics added), as well as the development of market linkages that connect importers directly with producers, thereby eliminating intermediate buyers and sellers from the commodity chain (interview, April 2014, deputy director of a nonprofit organization for marginalized groups in Khulna). Although the food security targets that motivate such activities have been elusive, there has been "significant progress in stimulating export value chains through involvement of Dutch companies" (Kessler et al. 2017, xiv). External evaluators attributed the "effectiveness of the projects" in part to "positive developments … in aquaculture, which is simply a booming business" (Kessler et al. 2017, xvii).

Shrimp farming is not the only industry serving up lucrative opportunities. Foreign experts are also cashing in on Bangladesh's troublesome hydrology. Disparities in the salaries of foreign consultants and local experts indicate where value can be extracted and whose work is valued. For its water resource management component, Blue Gold budgeted US$2.1 million for 1.25 international consultants over the project's six-year life span (Blue Gold 2012). Nearly an equivalent amount was allocated for the salaries of their local counterparts, with US$2.2 million used to support eleven Bangladeshi engineers and hydrologists (Blue Gold 2012). Although the government of Bangladesh has periodically decried the onerous conditions that attend foreign aid (e.g., Payne and Bystrova 2013; McVeigh 2016), the money for embankments—and foreign consultants—keeps flowing.

Enduring Embankments

Despite extensive and ongoing investments of US$10 billion in embankments (Cohanpour 2013), the same problems of vulnerability to hydrological hazards (flood, drought, salinity) and underdevelopment (poverty, food deficits) that first prompted foreign intervention in Bangladesh persist and spur additional foreign intervention. To illustrate, the World Bank describes its US$400 million Coastal Embankment Improvement Project thus:

> Rehabilitation of a total of 17 polders in six coastal districts will provide direct protection to the 760,000 people living within the polder boundaries, enhance their livelihoods through increased agricultural production and strengthen the overall resilience of the coastal areas to cyclones, storm surges and floods. (World Bank 2018)

When stripped of their social, political, and environmental histories, polders appear to be essential features of a "disaster-prone" region that require maintenance for the well-being of local populations, rather than key contributors to their vulnerability. Even their maintenance is framed as a problem requiring foreign solutions:

> The challenges to realise sustainable development within the polders are technically complex and institutionally demanding. *Dutch knowledge institutes and private companies* in the water and productive sectors *will introduce innovative approaches and technologies* to find appropriate solutions in close coordination and cooperation with Bangladeshi partners. (Blue Gold 2012, 20, italics added)

The rhetoric about the indispensability of permanent embankments proves to be remarkably malleable. With climate change commanding greater attention worldwide, diverse actors in development, academia, government, and popular media increasingly interpret water hazards in Bangladesh through the lens of climate change, typically in the absence of historical and ongoing practices of land use and water management (K. Thomas 2019). There is no evidence that floods, droughts, or cyclones in Bangladesh have become more common or intense (Brammer 2016). Development and government agencies, however, operate on the basis that such changes are impending and should take priority over more proximate factors that might actually have a greater effect on water hazards, including mangrove deforestation for shrimp farming (N. Ahmed et al. 2017), land subsidence (Brown and Nicholls 2015), and embankments that impede sediment deposition (Auerbach et al. 2015) and constrict tidal river channels (Pethick and Orford 2013). These non–climate change–related factors exacerbate storm damage, erosion, flood risk, and seawater intrusion, yet are sidelined in favor of depoliticized narratives that portray coastal Bangladesh as a passive victim to the inexorable march of climate change. By emphasizing sea-level rise, extreme storms, and drought—risks that are beyond Bangladeshi people's control—such narratives provide further justification for water and land use management schemes centered on polders (e.g., WorldFish 2012; Cohanpour 2013; Green Climate Fund 2015; see Paprocki 2018). Polders and other water infrastructure become so commonsense as to need no rationale beyond that of imminent climate change impacts (e.g., World Bank 2018). Permanent embankments are not just structures made to endure environmental stresses but have become yet another issue for residents to endure.

A Case for Interest-Sheds

> Problem-solving always gives me cold feet because I want to know who is framing the problem. (Jasanoff 2018)

When viewed from a problemshed perspective, policymakers, government officials, engineers, and adaptation practitioners in Bangladesh are doing everything right. They source solutions from beyond the immediate issue area to address persistent issues regarding water hazards, poverty, food insecurity, and internal displacement. Proponents argue that the problemshed approach can "provide effective control" over diverse environmental problems (Purdom 1971, 563), enable politicians to circumvent tendentious riparian relations (Allan 2001), facilitate more flexible and inclusive resource management systems (Mollinga, Meinzen-Dick, and Merrey 2007), and remedy water scarcity (Turton and Ashton 2008). Close scrutiny of this approach in practice, however, reveals a central pitfall of focusing on solutions. Constraining analysis to problems and solutions obscures the interests that implicitly and explicitly inform how problems are framed and solutions to them are devised, as well as the myriad interests that are subsequently advantaged or ignored in the course of responding to problems.

Water management and international development in southwestern Bangladesh are wholly consistent with the problemshed approach, but they have helped entrench rather than ameliorate flood risk, poverty, and livelihood precarity in the region. The process of enrolling foreign development experts, engineers, and aid agencies in generating solutions renders complex hydrosocial relations amenable to apolitical, techno-managerial interventions (Swyngedouw 2013). These schemes have most conspicuously taken the form of water management infrastructures like polders, sluice gates, and canals, as well as large-scale agrarian transformations facilitated by the promotion of Green Revolution technologies and brackish-water aquaculture. Important but less obvious interventions include the introduction of a centralized water bureaucracy, gendered manual labor practices, international trade policies, surplus grain shipments, overseas markets, and seafood value chains.

Although such interventions have had uneven and often deleterious impacts on local socioecological systems (Table 1), they have generated positive financial and professional outcomes for many shrimp farmers, government officials, development experts, and engineers, among others. Incidentally, they also supply global shrimp markets (Swapan and Gavin 2011) and sustain a surplus labor force that provides a ready source of workers for "essential" earthwork projects (A. Ahmed et al. 1995). Drawing attention to such side effects has done little to reconfigure development itself. Examining processes like embankment construction and cutting or "job creation" mechanisms like food-for-work and LCSs, however, helps pinpoint consequential moments for competing choices and interests. Such an exercise recuperates the politics of the technical by reconfiguring "detached" and "rational" decision making as the pursuit, privileging, and omission of variously situated interests.

Problemshed-oriented approaches in Bangladesh have only perpetuated the problems they aimed to resolve. The notion of a "shed" or catchment remains a useful one, though, and can be repurposed for mapping how ideas, interests, knowledge, and goals flow toward and aggregate around an issue. Therefore, I propose decentering problems to focus on interests—in other words, to think not in terms of problemsheds but in terms of interest-sheds.

The interest-shed includes the catchment of interests that cohere around a complex, multiscalar issue. An interest-shed approach to the interlinked issues of water hazards and poverty in southwestern Bangladesh begins with the understanding that hazardous

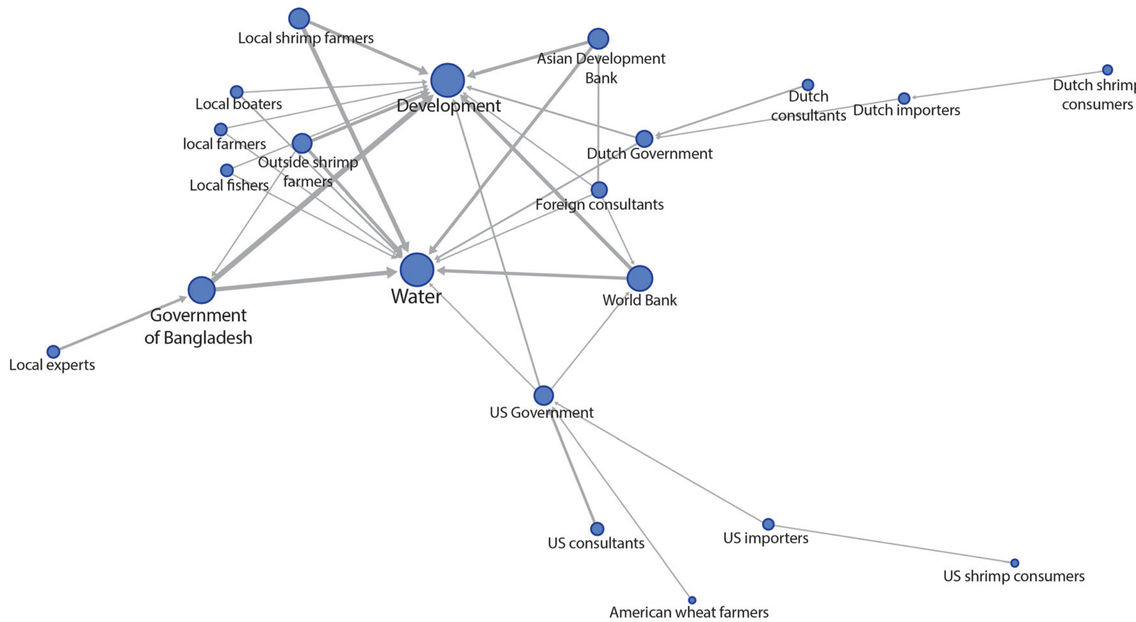

Figure 4. A network graph depicting a subset of the diverse interests that comprise the present-day Khulna water/development interest-shed. The "water" node represents a composite of all water issues in which humans and nonhumans have a stake, including quality, quantity, timing, and distribution. The "development" node denotes personal (e.g., enrichment, professional advancement) and collective (e.g., social services, improved infrastructure) development. Arrows indicate the direction of interest flows. Arrow widths estimate the extent to which interests are expressed or served in the current configuration of water infrastructure and land-use practices in Khulna. Larger nodes indicate more connections.

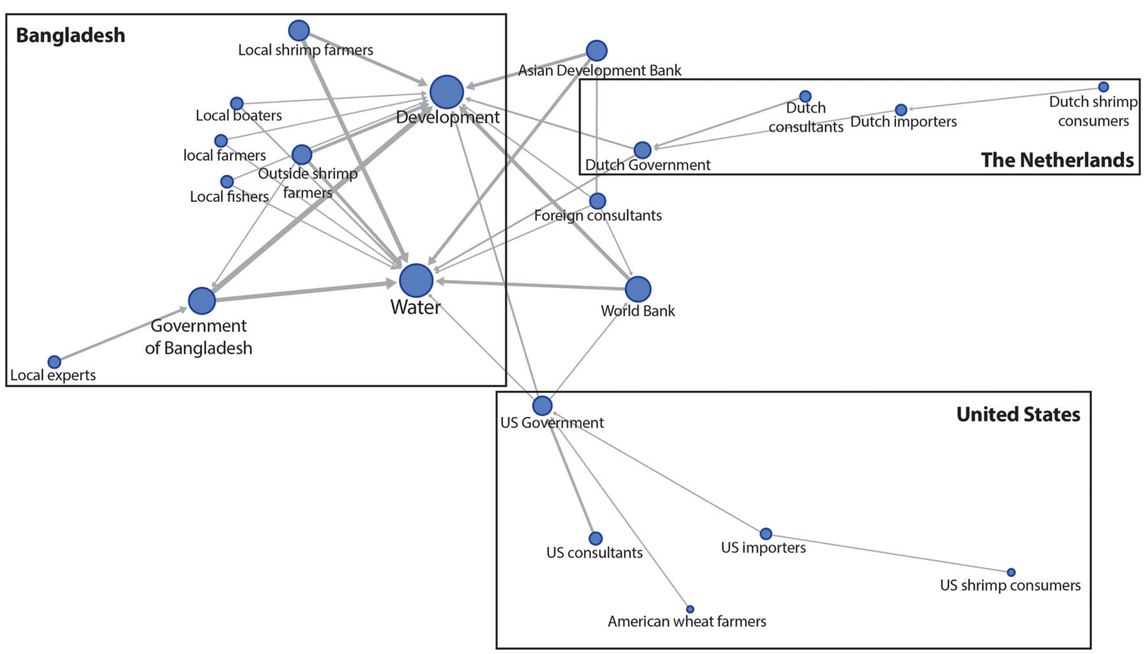

Figure 5. Boxes overlaid on the interest-shed map indicate how nodes cluster geographically and highlight transboundary flows of interests.

landscapes are constructed rather than natural (O'Keefe, Westgate, and Wisner 1976; Blaikie et al. 1994) and proceeds toward the question of what processes have made them so. Once the interest-shed has been characterized—for example, along the lines of the foregoing analysis—it can be represented via any number of forms (e.g., plot, chronicle, map, flowchart, inventory, diagram). I use a network graph (Figure 4) to illustrate how the interest-shed builds on existing concepts for tracing processes and relationships.[2]

As with the "chain of explanation" method common to political ecology (see Blaikie and Brookfield 1987), the interest-shed situates spatially delimited problems within a context of multiscalar processes. Explanations and, by extension, chains of explanation, however, can only ever be retrospective. By focusing on the interests that are attracted to and pool around an issue, the interest-shed can be proactively applied to assess how particular interventions reflect, privilege, or ignore different interests. Community organizers, government agencies, and researchers, among others, are thereby equipped with a tool to evaluate prospective courses of action and locate opportunities for redirecting attention or resources to better serve marginalized interests.

Geographers have likewise found "assemblage" to be a powerful analytic for understanding sociospatial processes, forms, and effects in relational terms (Anderson et al. 2012; Roberts 2014). As another method for characterizing dynamic systems, the interest-shed unavoidably harbors the same pitfalls as the assemblage approach of producing "anexact expressions" that elucidate things that quickly become other things (Robbins and Marks 2010, 191) or amounting to a "simple joining-up exercise" (Allen 2011, 156). Whereas the problemshed concept depoliticizes the basin by rendering it natural, the interest-shed concept benefits from its invocation of a catchment. This physical metaphor can help sharpen some of the fuzziness that attends assemblages by more clearly spatializing the flows of interests that inform the identification of problems, causes, and solutions. Whether conceptual or physical, water features like river basins and sheds elude tidy demarcation. Like a watershed, though, an interest-shed is not everywhere. It has a geography within which actors like USAID, shrimp consumers, and engineers are situated (Figure 5). Mapping these actors and their interests can help differently positioned groups visualize where interests originate and how they move through space. Whereas assemblage is a heavily theorized and somewhat rarified concept (e.g., Müller 2015), the interest-shed draws on familiar language accessible to nonspecialists. The fact that interest-sheds can be represented in multiple forms also makes them amenable to the participatory methods that are necessary for democratizing the problem-solving process (Pain 2004).

Politicizing Environments Democratically

Tracing flood risk management in Bangladesh from the mid-twentieth century onward reveals that a diverse suite of interests has been privileged, silenced, masked, and fought for in the course of building polders, adopting shrimp farming, erecting sluice gates, and maintaining embankments. Rendered as a network graph, we can see that the Khulna interest-shed is anchored by the main concerns of water and development, in which local residents, foreign consultants, Bangladeshi engineers, and U.S. farmers all have a stake, although unequally represented (Figure 4). Such interests are kaleidoscopic, whereby economic, vocational, personal health, religious, political, and myriad other motivations collide and shift over time (see Silvia 2006). Thus, what emerges from the interest-shed approach is an understanding of coastal Bangladesh not as a "low-lying, densely-populated, disaster-prone delta" but as a dynamic and unstable configuration of water, sediments, land-use practices, and infrastructures. The motivation for conducting this exercise is not to find a smoking gun or catch certain actors in a "Gotcha!" moment but to politicize environments and locate entry points for producing natures democratically. Swyngedouw (2011) suggested:

> Politicizing environments democratically … becomes an issue of enhancing the democratic political content of socio-environmental construction by means of identifying the strategies through which a more equitable distribution of social power and a more egalitarian mode of producing natures can be achieved. (273)

There are four ways by which the interest-shed approach provides a means for politicizing environments and producing egalitarian ecologies. The first relates to the observation that "hydro-social configurations … generally reflect hegemonic political, social, and cultural preferences" (Swyngedouw 2009, 59). Although problemshed proponents seek to overcome the interests entrenched within a river basin or "issue network" (Mollinga, Meinzen-Dick, and Merrey 2007), they fail to account for the vested interests that might exist outside of it, such as those of international consultants and aid agencies (Figure 5; see also Roberts 2014). By contrast, an interest-shed approach decenters problems to account for the fact that the very acts of defining problems and crafting solutions are political and reflect situated interests.

A second and related aspect of the interest-shed approach is its accessibility. In contrast to stakeholder management, in which designated decision makers determine whose perspectives are heard and who has legitimate stakes in an issue, anyone can trace interest flows within an issue network. It is precisely for this reason that I have cited peasant workers such as boatmen and fisherfolk alongside technological experts and academic analysts. Once mapped, the interest-shed can be used as an instrument for making appeals to or claims on relevant institutions, identifying discrepancies between interests, and highlighting policy inconsistencies (e.g., between stated and realized goals), for example. In other words, the interest-shed can serve as a conceptual tool or assume diverse material forms for any number of political uses.

Third, an interest-shed strategy can be implemented proactively or retroactively. Thus, groups might examine various interests as responses to problems are being formulated and use interest-shed–based materials to evaluate planned measures or to argue in favor of or against particular proposals. Alternatively, an interest-shed can be explored after policy or other interventions have been implemented, as I have done here. Given the growing support for adaptive strategies (e.g., Schultz et al. 2015), interest-sheds could be drawn at various stages of a long-term project to gauge how an intervention is performing and along what lines. In this latter context, interest-sheds can be used to identify problematic practices and inform potential course corrections.

Finally, interest-sheds can be productively applied toward understanding and addressing any complex issue. Although the shed metaphor draws from the hydrological sciences and the problemshed has been applied primarily to water resource management, the interest-shed is not limited to addressing water problems. As I and others demonstrate, flows can be comprised of a multitude of tangible (e.g., sediments, pollutants, animals) and nontangible (e.g., information, capital, energy) entities (e.g., Roberts 2014; Batubara et al. 2018; Goh 2019). The potential reach for the interest-shed concept is only limited by the number of complex problems for which there are diverse and competing interests.[3]

Conclusion

Foreign development projects that purport to alleviate poverty, increase food security, reduce hazards vulnerability, and facilitate climate change adaptation in southwestern Bangladesh in fact perpetuate the conditions and rationale for continued flows of aid dollars into the country. Rather than benefiting poor and hazards-vulnerable populations, foreign engineers, consultants, suppliers, importers, and affiliated firms are the principal beneficiaries of polder rehabilitation and shrimp farming projects. Analogous dynamics are well documented in the critical development literature, which I extend through a focus on interests.

Focusing on problems is an inherently depoliticizing act that diverts attention away from the interests that are served in the course of identifying problems, their causes, and possible solutions. Here, I have set out a framework for understanding the configuration of those interests. Identifying interests and making political that which has been depoliticized is awkward business, however. It is only appropriate that the ungainliness of airing and discussing interests be captured in the name of the framework itself: the interest-shed. I advance the notion of the interest-shed to politicize the decisions in technomanagerial approaches that have been sanitized of politics.

Drawing on the metaphor of a catchment, the interest-shed provides a conceptual and practical tool for visualizing the interests that flow toward and cohere around complex, intertwined, multiscalar social and environmental issues. Although government and development agencies often depict such issues as natural functions of hydrology and geography, even a cursory sketch of the Bangladesh water and development interest-shed illustrates the breadth of interests that actively produce the coastal hydrohazardscape. We see, for instance, that farmers, shrimp and otherwise, want to maximize production and profits. Khulna residents desire freshwater year-round and to be protected from the violence of floods, storms, and musclemen. Development consultants seek lucrative contracts through meaningful work. European and North American consumers demand safe, cheap, readily available shrimp. Rice and vegetable growers want their "fair share" of water when their crops need it and to avoid losses from waterlogging and salinization. Multilateral development banks need customers for their loans. Bangladeshi hydrologists and engineers want to solve problems. U.S. farmers desire markets for their wheat. By mapping out these various interests and making them explicit, we can structure more democratic, egalitarian natures. Rather than assuming that nature is a depoliticized set of inexorable forces "out there," the concept of interest-sheds shows how all of the natures we make are products of our political choices.

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Notes

1. People residing in some project areas do claim benefits of flood protection (Paul 2003), but the benefits accrue unevenly and typically only toward politically connected individuals (Thompson and Sultana 1996; Warner 2010). Furthermore, polders consistently fail to meet projected targets in terms of area protected and crop yields (J. W. Thomas 1972; Brammer 1983; Nowreen, Jalal, and Khan 2014).
2. Nonhuman interests are omitted for graphical clarity.
3. Interest-sheds can also accommodate nonhuman interests (Panelli 2010), which might be reflected in the maintenance or destruction of critical habitat, for example.

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