

The impact of decision-making on conflict: Rethinking the roles of technocrats and residents during Tidal River Management in coastal Bangladesh

Sanchayan Nath^{a,*}, Jahin Shams^b, Frank van Laerhoven^a, Peter Driessen^a

^a Copernicus Institute of Sustainable Development, Utrecht University, Heidelberglaan 2, 3584 CS Utrecht, The Netherlands

^b Uttaran, Road #10/A, Dhanmondi, Dhaka 1209, Bangladesh

ARTICLE INFO

Keywords:

Conflict
Land-use
Technocratic participatory and sociocratic decision-making
Tidal River Management
Polder

ABSTRACT

Tidal river management (TRM) is a building-with-nature practise which was locally developed to tackle the problems of polderization in the south-western delta of Bangladesh. This practise was subsequently adapted by public agencies. However, all TRM sites are associated with violent conflict. While law-enforcement agencies have often struggled to bring such conflict under control, there is variation in the extent to which conflict associated with TRM has been resolved at different study-sites. However, different decision-making approaches have characterized different implementations of TRM. Different implementations of TRM are also characterized by differences in the role of civil society organizations (CSOs). Therefore, this article hypothesizes that variation in conflict resolution is associated with variation in decision-making approaches and role of CSOs. Accordingly, the research question that this article seeks to answer is: How can conflict be resolved for the effective planning and implementation of TRM? This question is answered by analysing 5 case-studies on TRM using a typology of three different decision-making approaches: technocratic, participatory and sociocratic. Using data collected via 2 focus-group discussions, 66 semi-structured interviews and secondary research, this article analyses issues associated with power differentials, dysfunctional consensus, differences between local & scientific knowledge and the role of CSOs in resolving conflict. This research reveals that conflict during TRM implementation can be successfully resolved by the development of conflict resolution mechanisms which are locally-respected and are also considered trust-worthy by the elite. The elite will become more receptive to engaging with the public if TRM implementation is characterized by sociocratic decision-making.

1. Introduction

Land-use decision-making is characterized by conflict (Cieślak, 2019). Conflict over landuse often takes place amongst stakeholders such as: bureaucratic/technocratic elite from public or multilateral agencies, local landed elite, civil society organizations (CSOs), and local public (Steelman, 2001; Gain et al., 2017; Mutahara, 2018). Conflict

occurs when stakeholders have opposing expectations, and interests²² in the use of land, such that one party attempts to derive personal profit at the expense of the other parties without the explicit approval of the others (Coser, 1957; Stepanova, 2015; Stepanova et al., 2020); especially, when local public don't see eye-to-eye with the local technocratic elite or when the local landed elite and marginalized local communities have different ideas about how land should be used (Gain et al., 2017;

* Corresponding author.

E-mail addresses: s.nath@uu.nl (S. Nath), jahin.shams@yahoo.com (J. Shams), F.S.J.vanLaerhoven@uu.nl (F. van Laerhoven), p.driessen@uu.nl (P. Driessen).

¹ ORCID: 0000-0002-9944-1249.

² Such conflict often occurs in societies where land ownership or political power is concentrated in the hands of a few wealthy and powerful entities who have a 'vested interest' in ensuring that their wealth, power and privilege is not challenged by the rest of society. See Veblen (1919) & Coser (1957). For the purposes of this article, we define the term 'elite' to include all those social entities (including bureaucratic/technocratic elite, landed elite and political elite) in whom the locus of decision-making is vested because such actors are often assumed to be the most suitable entities for making governance decisions (Steelman, 2001). We define the landed elite as those powerful and wealthy societal entities who have a 'vested interest' in ensuring that their control over land does not get challenged by 'resistance' from other societal groups. Such societies may also be characterized by the presence of other kinds of vested interest groups such as the political elite whose control over the levers of societal power remains entrenched and unchallenged.

<https://doi.org/10.1016/j.landusepol.2022.106103>

Received 18 May 2020; Received in revised form 11 March 2022; Accepted 14 March 2022

Available online 19 March 2022

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Mutahara, 2018; Cieślak, 2019). Conflict often gets intensified in regions characterized by high population density (Cieślak, 2019): such as in coastal regions. However, limited research appears to have been conducted on conflict between local marginalized communities and local elites with a vested interest in ensuring their control over resources remains unchallenged. Clarity is also required on how such conflict can be resolved (Stepanova, 2015).

Coastal regions are densely populated. More than 40% of the world's population lives within 100 kilometers of the global coastline (Moser et al., 2012). Local residents as-well-as the local landed and technocratic elite have long been aware of the important role that coastal regions play in the lives of the local populace. Therefore, in order to maximize productivity of land-use, huge capital investments have been made in constructing coastal infrastructure such as dykes, embankments, *polders*³ and other polder-like-structures (Dewan et al., 2015). Today polder-like structures have come up across the world: Bangladesh, India & China in Asia; Netherlands, Denmark & Belgium in Europe; Morocco & Egypt in Africa; Venezuela & Argentina in South America; and, USA in North America (Inniss and Simcock, 2016).

Land-use decision-making associated with the polders of Bangladesh have been characterized by conflict since the 1960s, when the first polders began to be constructed (Alam et al., 2017; Ishtiaque et al., 2017; Mutahara et al., 2020; Paprocki and Cons, 2014). While flooding reduced and agriculture productivity increased on the short term (Choudhury et al., 2004; Paprocki and Cons, 2014), the long term effects of polderization are more profound. Over time, agricultural cultivation in the region has decreased, but aquaculture cultivation has increased (Akber et al., 2018). The introduction of shrimp farming in the region was characterized by intense conflict between the local landed elite and other local residents dependent on traditional agriculture-related forms of livelihood (Ishtiaque et al., 2017; Paprocki and Cons, 2014). This is because the landed elite had a vested interest in profiting from land and shrimp farming appeared to be more profitable than rice; in contrast, the transition to shrimp farming forced local marginalized communities to purchase rice from markets which increased their cost of living (Haque et al., 2015; Paprocki and Cons, 2014; Pokrant, 2014).

In addition, a large number of polders, especially those located in the south-western belt, have witnessed increased water-logging and drainage congestion (Auerbach et al., 2015; Alam et al., 2017). Water flowing through local channels has also reduced due to increased sedimentation of the region's waterways (Wilson et al., 2017). Such developments have intensified conflict over issues such as livelihood choices, operation of polders, etc. (Dewan et al., 2015; Nath et al., 2020).

Starting in 1986, conflict intensified in the polders of south-western coastal belt when locals began to periodically breach local embankments (temporarily at points where the embankment is located next to a water-body) based on the assumption that this would recreate the hydrological conditions that existed prior to polderization (Van Staveren et al., 2017; Hanlon, 2020; Mutahara, 2018;). Scholars have begun referring to this land-use practise as *TRM* or *tidal river management* (Seijger et al., 2019). The effects of TRM are disputed: on the short-term, TRM reduces water-logging and drainage congestion and increases agricultural productivity (Al Masud et al., 2020; Adnan et al., 2020; Gain et al., 2019;); but, erosion also increases and large populations are displaced (Roy et al., 2017). Over time, water-logging and drainage

congestion begins to increase again; in addition, residents of areas affected by TRM may feel that their livelihood is more vulnerable than those living in other areas (Nath et al., 2019). Such effects are more or less similar across TRM sites. However, different decision-making approaches have characterized different implementations of TRM (see case study). Different implementations of TRM are also characterized by differences in the role of civil society organizations (CSOs) (Dewan et al., 2015; Gain et al., 2017; Mutahara, 2018). Nonetheless, all TRM sites are associated with violent conflict (Gain et al., 2019). While law enforcement agencies have often struggled to bring such conflict under control (Van Staveren et al., 2017; Mutahara, 2018), there is variation in the extent to which conflict associated with TRM has been resolved at different study-sites (Gain et al., 2019). The common feature of such conflict is that irrespective of study-site, the bureaucratic/technocratic elite from public or multilateral agencies, local landed elite, CSOs, and local public have had differences on how TRM such planned and implemented. However, there is lack of clarity on how such conflict can be managed for the effective planning and implementation of TRM (Gain et al., 2017; Mutahara, 2018). While there is some evidence to suggest that mediation by CSOs can resolve such conflict (Barnes and van Laerhoven, 2013, 2015), there is yet no clarity on whether the same applies to conflict resolution during TRM.

Therefore, this article hypothesizes that variation in conflict resolution is associated with variation in decision-making approaches and role of CSOs. Accordingly, the *research question* that this article seeks to answer is: How can conflict be resolved for the effective planning and implementation of TRM? This question is answered by analysing case-studies on TRM from the south-western coastal belt of Bangladesh using a typology of three different decision-making approaches (technocratic, participatory and sociocratic) drawn from the planning and policy studies literature (Narayan-Parker, 1993; Faludi and Korthals Altes, 1994, 1997; Faludi and Valk, 1994; Steelman, 2001; Reed, 2008; Wit et al., 2009; Raymond et al., 2010; Furlong et al., 2016). This is because empirical analysis on the differential effects of different decision-making approaches is limited. Limited research appears to have been conducted for testing such theoretical ideas about decision-making approaches. There is limited research on the effectiveness of sociocratic approaches. Some research has been conducted on how sociocratic approaches reduce corruption, increase transparency, increase spending on the marginalized, empower communities, increase monitoring and enforcement and lead to innovative solutions (Navarro, 1998; Heller, 2001; Gaventa, 2004; Reed, 2008). Not much research appears to have been conducted on how conflict can be managed when technical/-bureaucratic elites and the public work together to solve problems of common concern. Additional research needs to be conducted for analysing whether sociocratic decision-making does indeed resolve conflict to greater extent as compared to technocratic or participatory decision-making (Futrell, 2003).

The next section characterizes these decision-making approaches and their association with conflict. Conflict and decision-making structures associated with different implementations of TRM are then analysed as a case-study. The article concludes with a discussion on the findings from the case-study.

2. Theory: technocratic, participatory and sociocratic decision-making

This article categorizes scholarly literature on decision-making into three archetypes: (a) technocratic, (b) participatory and (c) sociocratic. According to the first archetype, public decision-making should be left to the technical or bureaucratic elite; this approach assigns a limited role for the public in the governance of their resources; this archetype is referred to as technocratic decision-making (Steelman, 2001; Silver et al., 2002; Wilson, 2006; Reed, 2008; Raymond et al., 2010). According to the second archetype, the public should play a much more active role in the governance of their resources; this approach assigns a

³ A polder can be conceptualized as a piece of low-lying land surrounded by embankments. The low-lying land is separated by the embankment from the hydrological regime surrounding it. Four components constitute a polder: sluice-gates, embankments, canals, and the enclosed, low-lying land. The enclosed, low-lying land is protected from flooding by the embankment. The flow of water in and out of the enclosed land is controlled by the sluice-gates. This water is transported across the polder by the canals (Segeren 1982; Ishtiaque et al., 2017).

limited role for the elite in the governance of resources; this archetype is referred to as participatory decision-making (Narayan-Parker, 1993; Steelman, 2001; Silver et al., 2002; Reed, 2008; Raymond et al., 2010). In between these two extremes, lies a third school of thought: according to this approach the elite and the public should work together to solve problems in which they have a common interest; some scholars have referred to this approach as sociocratic decision-making (Faludi and Korthals Altes, 1994, 1997; Faludi and Valk, 1994). This third decision-making approach is a hybrid approach which seeks to resolve the tensions between a proactive public and a technically-sound elite (Heller, 2001; Gaventa, 2004). The literature on decision-making is characterized by several such hybrid approaches which are quite similar to each other and go by different names (Furlong et al., 2016). This article draws on one such approach: the sociocratic approach proposed by Faludi and Korthals Altes (1994).

2.1. The technocratic approach

According to the technocratic approach, an expert is believed to be technically competent and knowledgeable about the intricacies of governance. Experts may believe that involving the public in decision-making is costly, inefficient, time-consuming as-well-as disruptive (Steelman, 2001). Organizational culture within elite organizations leaves little room for active public participation (Faludi and Valk, 1994; Steelman, 2001; Reed, 2008; Wit et al., 2009). The role of the public in planning and implementation is passive and limited (Steelman, 2001). In contrast, the technical or bureaucratic elite play a central role in governance; they are expected to work in 'public interest' (Faludi and Valk, 1994; Wit et al., 2009). The locus of decision-making therefore lies with them and is centralized (Faludi and Valk, 1994; Steelman, 2001; Wit et al., 2009).

According to the technocratic approach, planning is a linear process. Plan-alternatives are systematically worked out and the costs and benefits of potential solutions are compared to identify an optimal solution. The quality of a plan depends on collecting as much data as possible on a wide range of parameters, using 'scientific' methods. All these parameters are then considered for the preparation of the final plan, which is often in the form of a blueprint. The blueprint is sacrosanct and has to be implemented 'as-is': no aspect of the plan can be negotiated. If implementation fails, it is because the plan was not communicated properly to the implementer (Faludi and Valk, 1994; Faludi and Korthals Altes, 1997; Wit et al., 2009).

Communication between the makers of the plan and the users of the plan, according to the technocratic approach, is mechanistic: a one-way flow of information from sender to receiver. Implementation fails because the information got 'distorted' as it was getting transferred from the planners to the implementers (Faludi and Valk, 1994; Faludi and Korthals Altes, 1997; Wit et al., 2009).

The blueprint-like plan is expected to result in pre-defined outcomes and the plan is evaluated on the basis of whether the actual outcomes confirm with the pre-defined outcomes: any departure is considered as failure. The technocratic approach therefore follows ends-means logic: planners, implementers and evaluators are all objective and rational (Faludi and Korthals Altes, 1994, 1997).

However, in contrast to the technocratic approach, real-life decision-making is not linear but more unsystematic. Similarly, real-life decision-making is not rational: it is rarely possible to work out all the costs and benefits associated with the all the possible outcomes of a plan (Kingdon, 1995). In addition, because the technocratic approach assigns the locus of decision-making to the bureaucratic or technical elite, power imbalances characterise the system (Silver et al., 2002). This may lead technocrats to behave myopically or offensively with the public. In the process, they may ignore local knowledge possessed by the public or ignore the interests of the local public. Technocrats may also work in collusion with vested interests. They may also ignore ethical considerations and value judgments associated with societal complexities

(Steelman, 2001). The lay public may be considered 'ignorant' and the elite may believe that it is their role to 'educate' the public so as to bring their 'perceptions' in-line with 'expert opinion' (Futrell, 2003). Not only does this kind of "rigid" behavior by technocrats result in loss of public trust in government, but such behavior may delegitimize public opinion (Futrell, 2003; Silver et al., 2002). The public may begin to feel increasingly distrustful of experts. This may lead to adversarialism (Reed, 2008): grid-locks may begin to characterize decision-making; communication may break down, negotiations may fail and no common ground may be found between experts and the public. This may result in *conflict* leading to implementation failure (Futrell, 2003; Steelman, 2001).

2.2. The participatory approach

Proponents of the participatory approach argue that such *conflict* between technocrats and the public can be significantly minimized if the public has greater say in decisions which impact their lives (Futrell, 2003). This is because the participatory approach seeks to rebalance some of the power imbalances which characterize the technocratic approach – by including the marginalized in decision-making processes. As a result, participatory decision-making is often perceived to be fairer than the technocratic approach (Reed, 2008). Not only that: there is a consequent increase of public trust in governance and government (Silver et al., 2002). Varied sections of the public also learn to trust each other (Narayan-Parker, 1993; Steelman, 2001; Reed, 2008).

Participation can be defined as the process by which local stakeholders become actively involved with governance-related decision-making in matters which affect their lives (Reed, 2008). In the participatory approach, the locus of decision-making is vested in those sections of the public who may be affected by the decision-making process (Steelman, 2001). Decision-making is often shared and collaborative in which local experts may or may not play an important role. The degree of centralization is low (Narayan-Parker, 1993; Steelman, 2001).

Decision-making in the participatory approach depends on local knowledge. Scientific knowledge is systematized, decontextualized, generalized and therefore easily transferrable from one site to another. In contrast, local knowledge is informal, context dependent and is sourced from the collective experience of current residents and collective memories of the past (Narayan-Parker, 1993; Ingram, 2008; Reed, 2008; Raymond et al., 2010).

This emphasis on co-generation of knowledge results in reflective deliberation. Local needs are identified early in the planning phase. Innovative solutions get proposed. The whole process is messy but involved and energetic. The creative solutions which get proposed via the participatory approach are often better adapted to the local socio-political and environmental realities. Therefore, they enjoy greater acceptability amongst the public (Narayan-Parker, 1993; Ingram, 2008; Reed, 2008; Raymond et al., 2010).

Evaluation in the participatory approach often seeks to understand whether locals have been empowered – whether local capacity development has taken place (Narayan-Parker, 1993). Responsiveness to local needs is often an important metric for evaluating whether the participatory process has been effective or not; locals may also identify other metrics for the measurement of effectiveness (Steelman, 2001).

Organizational culture, especially in the lower levels of government is often sceptical of the value-added by including locals in decision-making. They fear losing grip over outcomes, and therefore government mandates on public participation rarely result in successful outcomes (Faludi and Korthals Altes, 1994; Reed, 2008; Wit et al., 2009).

The empowerment of marginalized sections of society as emphasized by the participatory approach may not be welcomed by the elite (Reed, 2008). Under such circumstances, "consultation fatigue" may develop if the public feels that they are being forced to participate in processes they have no capacity to influence. Another limitation of the participatory approach is that local knowledge, on which decision-making depends in

this approach, may sometimes be simplified, distorted, or exaggerated. Therefore, decision-making in the participatory approach may not be as sound as in the technocratic approach (Narayan-Parker, 1993; Reed, 2008).

Nonetheless, participatory approaches are characterized by a continuum of processes where cooperation and conflict coexist (Van den Hove, 2006; Van Laerhoven and Andersson, 2013). Processes characterized by “consultation fatigue” or “dysfunctional consensus” are probably more conflict-ridden (Cooke and Kothari, 2001; Reed, 2008). In such circumstances, the elite may pretend to “play the game of consensus” while pursuing their own narrow self-interest or colluding with vested interests instead of pursuing collective interests (Van den Hove, 2006).

2.3. The sociocratic approach

The sociocratic approach seeks to resolve the tension between the technocratic decision-making archetype and the participatory decision-making archetype (Heller, 2001; Gaventa, 2004; Faludi and Korthals Altes, 1994). It conceptualizes decision-making as a deliberative, cyclical process of identifying the most effective solution. The sociocratic approach is characterized by continuous communication between the makers of a plan and the users of the plan. Local interests and interests of marginalized communities are given importance. Planners share authority with implementers. Implementers are granted considerable say in negotiating the final outcome. The process is characterized by a collective understanding that different stakeholders perceive the goals, the outcomes and other characteristics of the decision-making process differently. As stakeholders continuously communicate with each other, they analyse and reinterpret each other’s viewpoint. In the process, they develop a better understanding of each other’s interests. The plan develops through such a process of learning and reinterpretation. Therefore, the sociocratic approach considers continuous communication essential for implementation success (Faludi and Korthals Altes, 1994, 1997; Faludi and Valk, 1994; Wit et al., 2009).

The sociocratic approach is not plan-led: rather, planning is strategic. The plan develops through a series of negotiations amongst various stakeholders. The plan is not considered a blueprint. It is indicative: a framework for action. Since the plan develops through a series of negotiations, planning in the sociocratic approach also generates a shared world-view amongst all stakeholders on how the outcome should look like, thus increasing the likelihood of implementation success (Faludi and Korthals Altes, 1994, 1997; Faludi and Valk, 1994; Wit et al., 2009).

Decision-making is considered to be effective if-and-only-if all stakeholders agree that the proposed course of action is feasible and if the final outcome is relevant for the local context. Conformance to a blueprint is not as important, deviance from the plan does not indicate failure; what is important is performance. All phases of decision-making in the sociocratic approach are collaborative. However, considerable importance is given to the technical and bureaucratic perspectives of the elite. Scientific knowledge is as important as local knowledge (Faludi and Korthals Altes, 1994, 1997; Faludi and Valk, 1994; Wit et al., 2009). Decisions based on such hybrid knowledge are likely to be more robust (Futrell, 2003). Locals may also feel more empowered and may cooperate with technocratic elites. In the process, technocratic elites may develop a more accurate understanding of local conditions (Reed, 2008).

The sociocratic approach does not assume that planners, implementers, and evaluators are objective and rational. The locus of decision-making rests with a coalition of parties consisting of technocrats and the lay public; the degree of centralization is low and decision-making is collective (Faludi and Korthals Altes, 1994, 1997; Faludi and Valk, 1994; Wit et al., 2009).

This process of hybridization with its focus on collective decision-making supported by negotiation and continuous communication is very useful for conflict resolution. This is because, in contrast to the technocratic approach which tries to “bring the public over to the side of

the experts”, sociocratic approaches of decision-making seek “symmetry” amongst of all stakeholders; rather than seeking to manipulate non-elites, coerce the marginalized or ignore experts, they seek to legitimize the perspectives of all parties in the eyes of the others (Futrell, 2003). Table 1 compares and contrasts the three decision-making approaches discussed in this section. It serves an analytical purpose. Nonetheless, the boundaries between these three archetypes are not as rigid as they may appear, and definitions can be subject to debate and reinterpretation.

2.4. Conflict resolution in technocratic, participatory and sociocratic decision-making

Technocratic decision-making may become associated with conflict if interactions amongst technocratic experts and local actors become characterized by adversarialism (Reed, 2008). Adversarialism may arise when technocratic experts collude with vested interests and ignore the interests of locals or the interests of marginalized communities. Adversarialism may also arise when technocratic experts ignore local knowledge and assign more importance to expert knowledge. In order to tackle adversarialism and reduce conflict, technocrats may resort to tokenism by engaging in symbolic public participation where-in technocrats pay only lip-service to local interests (Arnstein, 1969). Under such circumstances, dialogue may not be open or inclusive and therefore conflict may not get resolved to the satisfaction of non-technocratic stakeholders. This may lead stakeholders to seek out more ‘formal’ conflict resolution approaches such as seeking legal directives from the judiciary. However, conflict resolution is temporary: conflict may get escalated or prolonged at the slightest provocation (Yeatman, 1990; Tauxe, 1995; Stepanova, 2015; Stepanova et al., 2020).

Therefore, proponents of the participatory approach have argued that conflict due to adversarialism can be effectively tackled only if engagement with local communities moves beyond tokenism to actual citizen control of the decision-making process (Arnstein, 1969; Yeatman, 1990). If conflict arises under such circumstances, stakeholders may opt for informal conflict resolution mechanisms such as dialogue-based open-forums (Stepanova, 2015; Stepanova et al., 2020). However such informal conflict resolution mechanisms can lead to “consultation fatigue” or “dysfunctional consensus” (Cooke and Kothari, 2001; Reed, 2008). In addition, informal conflict resolution mechanisms dominated by local interests often disregard expert knowledge. Under such circumstances, participatory processes can get hijacked by vested interests working in cahoots with landed elites. Vested interests may “play the game of consensus” by side-lining marginalized communities from the decision-making process. This can again lead to adversarialism resulting in further escalation of conflict (Van den Hove, 2006).

In view of such problems, proponents of the sociocratic approach have adopted a middle path: they argue that mediation by third-party actors trusted by elites as-well-as by local marginalized communities can lead to effective conflict resolution (Arnstein, 1969). This is because mediation can bring diverse interests together via bridging and negotiation (Westley and Vredenburg, 1991). However, mediation will be effective only if it can compel all stakeholders to assign equal importance to expert as-well-as local knowledge during planning and implementation. In other words, knowledge integration is key to successful conflict resolution. This is because knowledge integration leads to joint agreement and common understanding of issues (Stepanova, 2015; Stepanova et al., 2020). In addition, mediation will be successful only if compromise characterizes the mediation process where-in the interests of marginalized communities are not sacrificed at the altar of expert judgment. This can only happen if mediation process can be kept free from interference by vested interests.

The five different study-sites (Fig. 1; Table 2) selected for this article have experienced conflict in one way or another. The case analyses below studies how the planning and implementation of TRM at these sites are associated with the three decision-making approaches

Table 1
Comparing technocratic, participatory and sociocratic approaches.

		Technocratic	Sociocratic	Participatory
Characteristic 1	Locus of decision-making	Bureaucratic or technical elite	Coalition of parties	Those affected
Characteristic 2	Degree of centralization	High	Low	Low
Characteristic 3	Opinion about elite	Trusting and competent	Integral	Cannot be trusted
Characteristic 4	Opinion about public	Ignorant	Integral	Knowledgeable
Characteristic 5	Role of elite	Central	One of many	Maybe
Characteristic 6	Role for the public	Limited	Continuous	Continuous
Characteristic 7	Form of plan	Blueprint	Strategic	Contextual
Characteristic 8	Planning process	Linear	Cyclical	Cyclical
Characteristic 9	Role of planning	Quest for control	Series of negotiations	Reflective deliberation
Characteristic 10	Data generated	Scientific	Hybrid: Scientific & Local knowledge	Local knowledge
Characteristic 11	Measure of effectiveness	Conformance	Performance	Responsiveness
Characteristic 12	Communication	Mechanistic	Continuous	Continuous
Characteristic 13	Fear amongst elite of losing grip on outcome	Low	Medium	High
Characteristic 14	Elite organizational culture	Leaves little room for active public participation	Encourages active public participation	Encourages active public participation

Source: Source: Narayan-Parker (1993); Faludi and Korthals Altes (1994); Faludi and Valk (1994); Faludi and Korthals Altes (1997); Steelman (2001); Reed (2008); Wit et al. (2009); Raymond et al. (2010); Furlong et al. (2016).

discussed earlier. These sites are located in the coastal belt of Bangladesh - in the deltaic region of three of the mightiest rivers of the world: the Ganga, the Brahmaputra and the Meghana. The south-western part of this belt is a mature delta. In this region, polderization led to the construction of long stretches of embankments along both sides of the rivers. A large number of waterbodies (*beels*) are located in the land adjoining the embankments. During flooding prior to polderization, fertile sediments would get deposited along the river-basins - in and around the beels. But polderization led to waterlogging in the same areas. By the mid-1980 s, waterlogging and drainage congestion had begun to severely affect the traditional, agriculture-dependent ways of life in this region. Local public grew restless and began protesting for a solution. When they received no support from the bureaucratic and technical elite, locals living in some localities along the Hari River decided to take the law into their hands. During 1989–90, the embankment near Beel Dakatia was breached. Breaching reduced waterlogging in the area for a few years, sedimentation increased. After a few years, the breach was closed, but locals continued to derive livelihood benefits. Water-flow also increased in the river. This practice later came to be known as tidal river management, or TRM⁴ (Gain et al., 2017; Van Staveren et al., 2017; Mutahara, 2018; Seijger et al., 2019).

Drawing inspiration from the breaching in Beel Dakatia, locals living in and around Beel Bhaiyna breached a point on the embankment adjacent to their *beel* in 1997. The bureaucratic and technical elite realized that this practise could be implemented at different points along the river. Therefore in 2006, the embankment near Beel Khuksia was breached by the Bangladesh Water Development Board (BWDB).⁵ However, this action sharply divided the locals in the area. Salinity intrusion increased, land acquisition problems arose and compensation-related problems lead to increased dissatisfaction in the region. Navigability of the waterways too reduced after some time. Therefore, a 2012 breach near Beel Kapitalia could not be executed by BWDB because of

⁴ TRM is a process of water and sediment management in which the embankment of a polder is intentionally breached at a point where the embankment lies close to a water-body (*beel*). The breach is closed after a certain period of time. For the period during which the embankment remains breached, water and sediments flow into the *beel* from the river during high tide. A link-canal transports the water and sediments from the breach to the interiors of the *beel*. During low tide, the water flows out leaving the sediment behind in the *beel*.

⁵ BWDB: Bangladesh Water Development Board is a Bangladeshi public agency entrusted with the responsibility of administering polders in the country

public opposition. BWDB probably assumed that in the face of such opposition, it would be difficult to carry out another formal TRM project in the water-logged regions along the banks of the Hari River. Therefore, they shifted their focus⁶ to another water-logged area in the south-western delta: along the banks of the river Kobadak and finally in 2015 it successfully breached the embankment near Beel Pakhimara (Van Staveren et al., 2017; Gain et al., 2017; Mutahara, 2018; Nath et al., 2019).

These five waterbodies: Beel Dakatia, Beel Bhaiyna, Beel Khuksia, Beel Kapitalia and Beel Pakhimara are the study sites in this article (Table 2). The common binding factor across these five study-sites is that they are all associated with TRM⁷ (Seijger et al., 2019). Seijger et al. (2019) distinguishes between two kinds of TRM: formal and informal. Earlier implementations of TRM are referred to as informal TRM: they were public-led, bottom-up and participatory with minimal involvement of the technical or bureaucratic elite. Later implementations of TRM are referred to as formal TRM: these were conceived, planned and implemented by the technical and bureaucratic elite.

Three factors can be used to differentiate between the research sites: (a) support for TRM amongst the local public; (b) decision-making approaches; and (c) varying involvement of CSOs (civil society organizations) in the planning and implementation of TRM. These factors are discussed in a subsequent section.

For more information on the size of livelihood groups and land-use associated with such groups at various points in time, see Karim and Mondal (2017), Mutahara (2018) & Al Masud et al. (2020). In general, agriculture is the traditional source of livelihood in this region. Livelihood patterns change after the embankment is breached for TRM. During the period over which the embankment remains breached, agriculture cannot take place in land inundated by tidal water. Fishing increases during this period. Traditional agriculturalists look for other sources of income such as van-driving or bike-driving. Out-migration increases: some residents start working in nearby mills. After the breach

⁶ There is no clarity on why this site was chosen for the 2015 TRM project and not some other site. Anecdotal evidence suggests that political considerations (electoral promises by the current Prime Minister of the country) probably played a role. However, the analysis of such political considerations is outside the scope of this research

⁷ There is disagreement amongst scholars and local communities if the community-led breaching in Beel Bhaiyna and Beel Dakatia should be referred to as TRM. However to avoid semantic ambiguity we follow the convention proposed by Seijger et al. (2019).

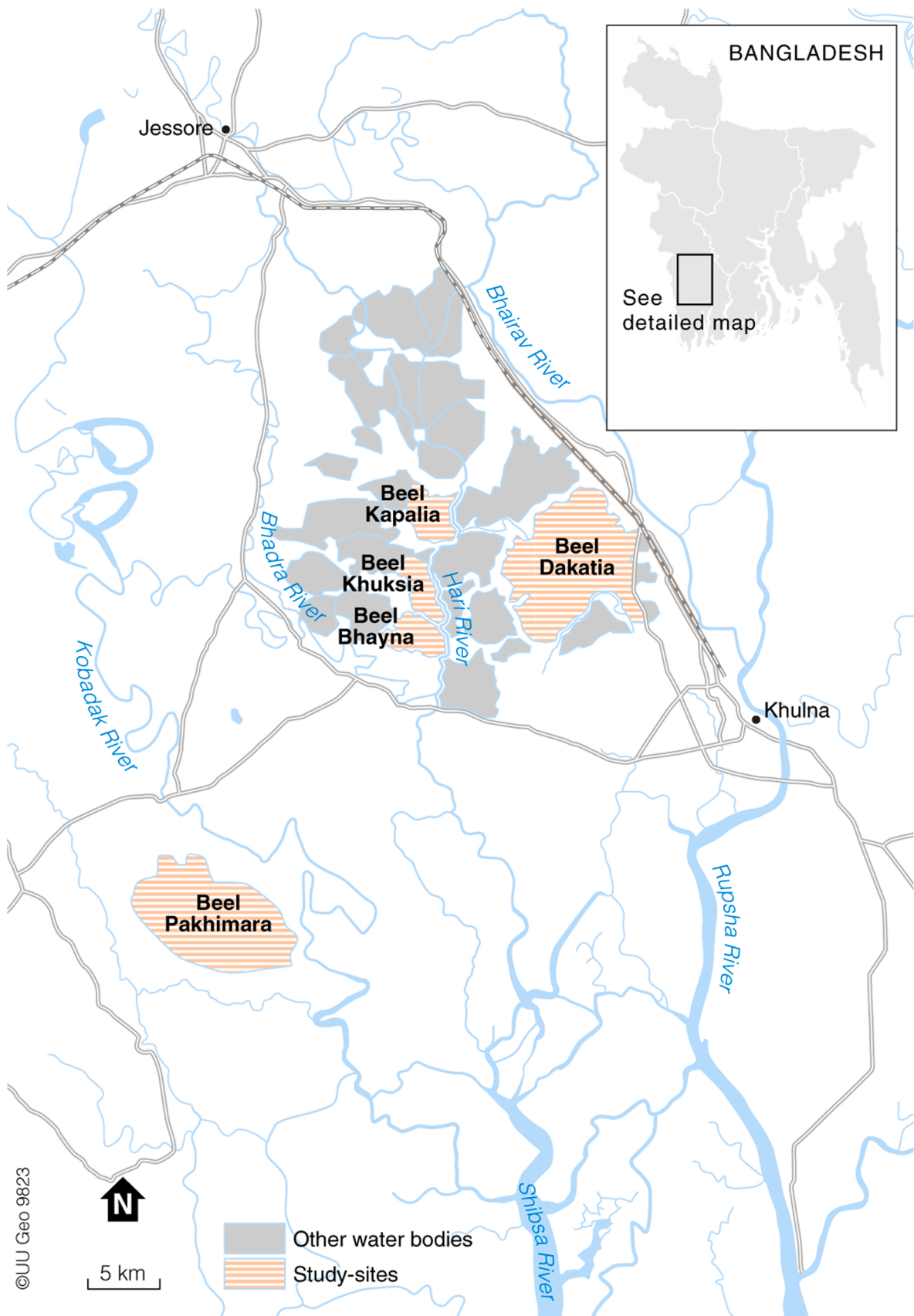


Fig. 1. Study sites.
Image adapted from Gain et al. (2017).

Table 2
Study-sites, TRM and different decision-making approaches.

Study-site	Type of TRM	Period during which Embankment remained breached	National Political Regime in the same period	Actors in favor of TRM	Actors opposing TRM	Support amongst locals for Breaching of embankment	CSO as Mediator	Decision-making Approach	Conflict resolution
Beel Dakatia	<i>Informal & Bottom-up</i>	1990 – 1994	– 1990 Military regime led by Hussian Md. Ershad	Local community, local development workers, local civil society organizations and other non-profits	BWDB and administrative authorities	<i>High</i>	No ^a	Participatory	No
			1991– 1996 Parliamentary regime led by Khaleda Zia of Bangladesh Nationalist Party						
Beel Bhayna	<i>Informal & Bottom-up</i>	1997 – 2001	1996– 2001 Parliamentary regime led by Sheikh Hasina of Awami League	Local community, local development workers, local civil society organizations and other non-profits	BWDB, administrative authorities, landed elite and local vested interests	<i>High</i>	No ^a	Participatory	No
Beel Khuksia	Formal & Top-down	2006 – 2012	2001– 2006 Parliamentary regime led by Khaleda Zia of Bangladesh Nationalist Party	BWDB, administrative authorities, research organizations such as CEGIS, multilateral organizations, donors, other technocrats, water management groups (WMGs) landed elite, and large sections of the local community	Local marginalized communities ^b , and others whose livelihood suffered because of inundation	Divided ^b	No ^a	<i>Technocratic</i>	No
			2006– 2008 Political crisis Caretaker government Military intervention						
			2009 - Parliamentary regime led by Sheikh Hasina of Awami League						
Beel Kapalia	Formal & Top-down	Postponed (proposed in 2013)		BWDB, administrative authorities, other technocrats, landed elites and some sections of the local community	Large sections of the local community, esp. local marginalized communities	Divided	No ^a	<i>Technocratic</i>	No
Beel Pakhimara	Formal & Top-down (ongoing)	2015 -		BWDB, administrative authorities, other technocrats, landed elites, some sections of local community	Large sections of local communities, esp. local marginalized communities	Divided	Yes	<i>Tending towards Sociocratic</i>	<i>Partial^c</i>

^a CSOs and WMGs were associated with all four implementations in various forms. However, these organizations were not effective in conflict resolution at any of these four sites.

^b Large sections of local communities were initially in favor of TRM but issues over planning and implementation forced certain sections of these communities to change stance.

^c Conflict did get resolved to a large extent at Beel Pakhimara; but was not completely eliminated.

Source: Source: Gain et al. (2017), Mutahara (2018) and Seijger et al. (2019).

gets closed and TRM stops, local residents adopt mixed forms of land-use in which land is used for agriculture during some seasons and for fishing & shrimp cultivation during other seasons (Al Masud et al., 2020; Mutahara, 2018).

3. Methodology

3.1. Data collection

The data for this research has been drawn from 2 focus-group discussions, 55 semi-structured interviews with local-residents, 11 semi-structured interviews with key-informants, and secondary review of journal articles, grey literature and reports generated by government agencies. The scheduling of the focus group interviews and the semi-structured interviews with local residents depended on the river along which respondents are located. The research sites for this article are located along two rivers (Fig. 1): four (Beel Dakatia, Beel Bhayna, Beel Khuksia and Beel Kapalia) out of the five research sites are located along the Hari River; the fifth site (Beel Pakhimara) is located along the Kobadak River. Data collection was first completed for respondents located along the Hari River and then data was collected along the Kobadak River.

First, two focus-group discussions were conducted in June-2017, along the Hari River. These discussions were exploratory in nature and lasted for about ninety minutes: the goal was to develop an understanding of the issues that needed to be probed in the interviews. Each group consisted of eight locals: care was taken to ensure that each group included representatives of different livelihood groups. Next, the first phase of 40 semi-structured interviews was conducted with local residents in June-2017 around sites located near the Hari River. Semi-structured interviews with 11 key-informants were then conducted in June-2017. These key information interviews, secondary research and preliminary interactions with local residents during site visits along the Kobadak River revealed that issues (at a broad level for the purposes of this article) characterizing sites along the Hari River were very similar to issues characterizing the research site along the Kobadak River. Therefore, additional focus group interviews were not conducted at any site near the Kobadak River. Finally, the second phase of 15 semi-structured interviews with local residents was conducted in April-2019 around the site located near Kobadak River. All semi-structured interviews with local residents were conducted in marketplaces located near the research sites.

In the focus group discussions as-well-as in the semi-structured interviews with local residents, all respondents were male. The age of each respondent was around 60 years. This sampling strategy was followed for three reasons: (a) ease of access - it is easier to interview male respondents in the region: because of the rigid social culture, women are often reluctant to participate in long discussions with strangers; (b) familiarity with events - events discussed in this article span over a 40 year period: older respondents are familiar with most of these events and therefore participated more effectively in the research; and, (c) tradition - male residents are traditionally responsible for agricultural and water management in the area: therefore, it was assumed that they would be more familiar with case-facts. These respondents were selected using two kinds of random sampling strategy: (a) purposive - so that the major livelihood groups were covered; and (b) convenience - based on ease-of-access to respondents. Key-informant interviews were conducted with 11 technocrats (from BWDB, IWM, CEGIS and IFI),⁸ academics and representatives of civil society organizations. These respondents are involved with TRM and/or have deep knowledge about the intricacies of this practise. Respondents for these key-informant interviews were

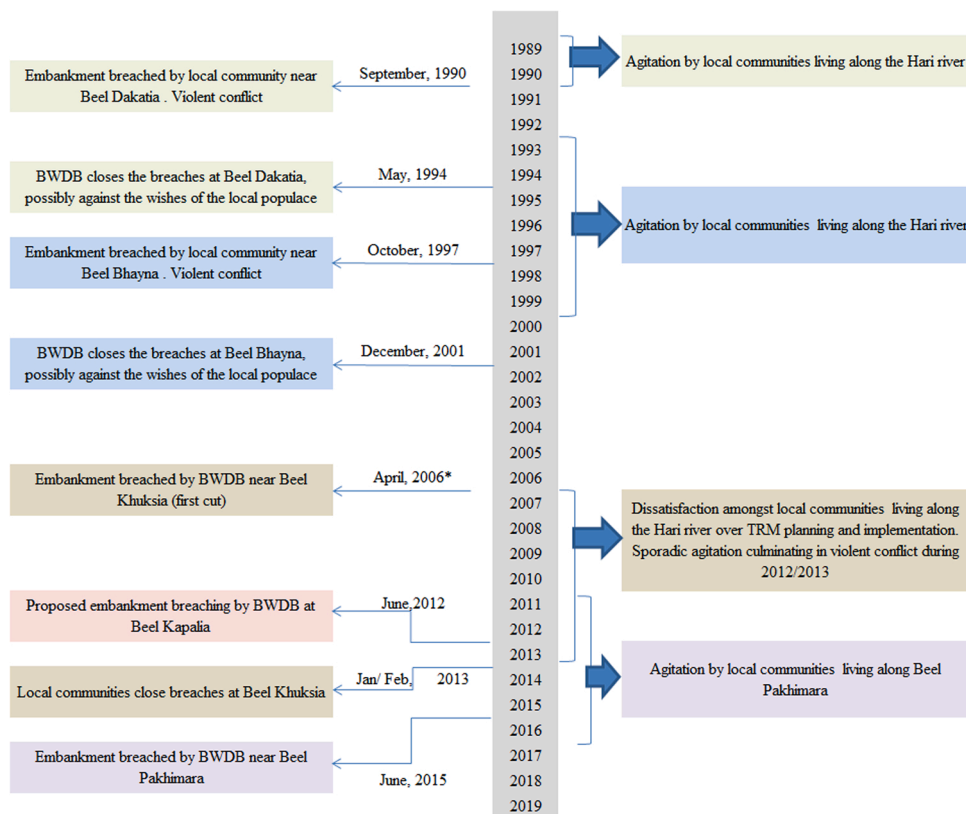
⁸ BWDB: Bangladesh Water Development Board; IWM: Institute of Water Modeling; CEGIS: Center for Environmental and Geographic Information Services; IFI: International Financial Institution

selected based on expertise, availability and willingness-to-talk. Such semi-structured interviews lasted for about thirty minutes. Interviews were conducted till saturation (in terms of new information generated) was reached. Questions asked included: the role of different kinds of stakeholders in TRM, importance of participation, conflict resolution between locals and elites, etc.

3.2. Data processing and analysis

Interviews were transcribed and interview reports were generated. Data was then analysed using the steps listed below. First, process-tracing techniques were used to map events discussed by respondents. This time-line of events was triangulated with information available in other secondary sources and with time-lines developed by other scholars (Van Staveren et al., 2017; Gain et al., 2017; Mutahara, 2018; Seijger et al., 2019). Any event or date derived from interviews which couldn't be verified from secondary sources was rejected. This timeline of events was used to derive values of the variable 'Period during which Embankment remained breached' (Table 2).⁹ A concise timeline of events is also provided in Fig. 2. The next step was to characterize the decision-making approach and conflict-related variables associated with various research sites (Table 2). The variables of interest are: (a) type of TRM; (b) Actors in favor of TRM; (c) Actors opposing TRM; (d) Support amongst locals for Breaching of embankment; (e) CSO as Mediator; (f) Decision-making Approach; (g) Conflict resolution; and, (h) How was Conflict Resolved. Values of the variable 'type of TRM' was populated using the convention proposed by Seijger et al. (2019). Values of the rest of the variables were coded from the interviews. Coding was an iterative 'soaking & poking' process (George and Bennett, 2005). Codes for the different values of each variable were derived from themes that emerged during the interviews. For instance, early in the interview process we realized that 'Support amongst locals for Breaching of embankment' was 'high' at some of the sites and 'divided' at the rest of the sites. Therefore, codes used for this variable were 'high' and 'divided' (Table 2). Such codes were then triangulated with information available in published articles and secondary reports. For instance, variables such as 'Actors in favor of TRM' and 'Actors opposing TRM' are well documented by Van Staveren et al. (2017), Gain et al. (2019) & Mutahara (2018). Therefore, when our codes matched information available in these articles, confidence in the validity of our findings increased. Codes for categorizing the different decision-making approaches were derived from Table 1. 14 parameters were used to characterize the decision-making approaches. The details of how the sites vary on these characteristics are discussed in Section 5. Minimal research has yet been conducted on these variables and therefore minimal information is available on these variables in journal articles. Therefore, collection of primary data provided greater value in this regard since the characterization of decision-making processes and associated conflict resolution mechanisms constitutes the primary empirical contribution of this article. During triangulation, information from different respondents was cross verified. If contradictions arose, the information was not included as a part of the final codes. Sub-codes emerged. Interconnections between these sub-codes were analyzed for patterned regularities and the sub-codes were re-categorized (Nath and Laerhoven, 2020). This process continued till saturation was reached. All the codes were then analyzed site-wise in order to typify the decision-making processes and conflict-related variables characterizing each site. Table 3 lists examples of codes derived from the interviews and sample codes corresponding to such codes. For instance, consider coding for the variable 'Conflict resolution': codes such as 'Technocrats limited in their ability to engage local stakeholders' and 'Technocrats have become more open over time' appeared to suggest that while technocrats have in the past been skeptical about

⁹ Values of the variable 'National Political Regime in the same period' were derived completely from secondary sources (Table 2)



* Locals opposed the breach of April, 2006 and closed it in July, 2006. But, the breach was reopened in November, 2006. Another breach-point was created in July, 2007

Fig. 2. Concise timeline of events at the research sites.

Table 3
Coding for case analysis.

Code	Sample Quotes
Conflict of interests	“different interest groups cause conflict”; “vicious circle of shrimp farming+ influential people”
Conflict over knowledge	“Clash between perspectives of what science is and what is nature.”
Technocrats limited in their ability to engage local stakeholders	“Water Board doesn’t like the social engaging”, “BWDB needs to be more open”
Technocrats have become more open over time	“WBD took the people idea. But has limitation on participation”; “Water Board ... tried ... but stakeholder conflict”
Locals need to be engaged	“it is necessary to everyone to participate”; “stakeholder consultation should be done”; “solution lies with ...social conflict management”; “local way of dealing”
Coalition of parties	“Delegated power- Partnership need”, “Solution- Public- private partnership.”
Need for third party conflict resolution	“needs intermediary”, “periodic third party enters”, “community-based organization (required) for connecting with multi stakeholder forces”,

engaging with locals, there may have been a gradual change in ‘Elite organizational culture’ (Characteristic 14; Table 1) over time. Similarly, as discussed in Section 2.4, codes such as ‘Locals need to be engaged’, ‘Coalition of parties’ (Characteristic 1; Table 1) and ‘Need for third party conflict resolution’ appeared to suggest that respondents appear to be suggesting that mediation by third-party entities may lead to conflict resolution. A detailed case-study was developed based on such analysis, as detailed below.

4. Case study

4.1. TRM in Beel Dakatia and Beel Bhayna

As discussed earlier, the first recorded instance of TRM occurred near Beel Dakatia. It was characterized by violent conflict: roads were blocked, protest meetings were held and people died in the ensuing skirmish. Locals breached the embankment. They were actively supported by local CSOs. Local non-profit organizations, local development workers and local activists¹⁰ played important roles in organizing local people together during the breach and associated protests (Paani Committee, 2001; Haque et al., 2013, 2015). This is because breaching and subsequent inundation of land was expected to benefit agriculture which has been the traditional way of life for local communities in the region. BWDB and other bureaucratic/technical elite opposed this move. The decision to breach the dam was inspired by a local, traditional water management practise of ‘temporal overflow irrigation’ (Van Staveren et al., 2017). The local public was knowledgeable about this practise and possessed extensive local experience in implementing it. But the local technocratic/bureaucratic elite were not convinced of the effectiveness of such measures for tackling water-logging. They were also not convinced that the local public could and should execute such an act on their own. The elite were therefore not trusted by the locals. Locals did not spend much time technically planning (using scientific knowledge) for this breach but drew on their extensive knowledge of the local area in order to determine the point of breach. The decision to breach the embankment was spontaneous and collaborative.

¹⁰ Some of the organizers may have had leftist leanings (Haque et al., 2013, 2015).

This informal implementation of TRM was considered effective by the locals because benefits were visible immediately and for the next few years. Locals also felt empowered by this act. In other words, the decision-making structure associated with the implementation of TRM at Beel Dakatia was participatory. Thus in spite of being participatory, this TRM implementation was characterized by conflict probably because of dysfunctional consensus amongst stakeholders where-in the elites believed that the polders were in public interest and any breaching was regarded as damage to public property. The marginalized view that breaching may restore land-water dynamics and provide succour to the public was probably ignored by the elite. The local administrative structure was unable to successfully resolve the conflict probably because local CSOs sided with the locals.

The decision-making approach, conflict characteristics and role of CSOs in the TRM implementation at Beel Bhayna was very similar to that characterizing the TRM implementation at Beel Dakatia. It was participatory. Again, there was conflict. Breaching was initiated by the local public and was actively supported by local CSOs. Similar to Beel Dakatia local non-profit organizations, local development workers and local activists played important roles in organizing local people together during the breach and associated protests. However, in contrast to Beel Dakatia, such organizational activities may have taken place under the auspices of an umbrella "citizen driven initiative" known as the Paani committee. However, Paani Committee made no attempts at mediation to reduce conflict (Haque et al., 2013, 2015). BWDB and other bureaucratic/technical elite opposed the move. In addition, landed elite and local vested interests with large investments in local shrimp-farming also opposed the move. By then, news about the embankment breaching at Beel Dakatia had spread to this area. Drawing on this information, their traditional expertise in practising 'temporal overflow irrigation', and local knowledge about the best point for breaching the embankment, locals executed the breach without any support from local public officials (Van Staveren et al., 2017). Not much time was spent in technical planning or scientific data collection. The local technocratic and bureaucratic elite continued to remain sceptical of the necessity of TRM and the ability of locals for implementing such a practise successfully, without external support. Similar to what happened in Beel Dakatia, this informal implementation of TRM too was considered effective by the locals because benefits were visible immediately and for the next few years. Locals also felt empowered by this act.

4.2. TRM at Beel Khuksia and Beel Kapalia

Two successful informal implementations of TRM at Beel Dakatia and Beel Bhayna captured the attention of the bureaucratic and technical elite. Under pressure from locals as-well-as international organizations, BWDB conducted detailed scientific studies (technical, environmental, and social) on the feasibility of TRM. National research agencies conducted extensive environmental impact assessments. Such studies confirmed the potential of TRM for reducing waterlogging in the area and for reducing siltation of the local water-ways, in addition to providing other benefits. Detailed blueprints were drawn-up for the phase-wise implementation of TRM across the south-western delta. In addition, while drawing up its plans, BWDB continued to ignore the perspectives of the local public. Locals were not convinced about the proposals made by BWDB on matters such as the timing for implementing TRM, the point of embankment-breach and similar matters. In addition, locals feared that the landed elite and vested interests would draw undue benefits from the project. In the meantime, the national government of Bangladesh had mandated the formation of water management groups (WMGs) and their involvement in water governance. Therefore, BWDB tried to involve local WMGs during the planning and implementation of TRM at Beel Khuksia. However, in spite of such opposition, BWDB went ahead and implemented its TRM blueprint for Beel Khuksia. In other words, the decision-making approach characterizing TRM in Beel Khuksia was technocratic. Therefore, as predicted by

theory, implementation was characterized by violent conflict: BWDB and the local landed elite supported implementation; locals, especially the marginalized, opposed implementation. This was probably because plans proposed by the technocrats were not acceptable to the locals. Conflict began before breaching and continued, well after the breached had been closed. Several times locals were injured, and public property was damaged. WMGs were unable to successfully resolve the conflict. This is probably because WMGs were often viewed with suspicion by locals, as they were seen as representing the elite. Scientifically-drawn plans developed by BWDB in Beel Khuksia were no better than the local knowledge-driven TRM implementation in Beel Bhayna and Beel Dakatia. For instance, in Beel Khuksia, BWDB was unable to successfully maintain the flow of sediments through the canal connecting the breach-point to down-stream areas of the beel. Therefore, in contrast to Beel Bhayna and Beel Dakatia, water-logging was reduced primarily near the breach-point (Gain et al., 2017). In addition, BWDB plan's for social rehabilitation was not very successfully. Its compensation plans received widespread support from the elite. But local public complained that the compensation mechanisms were faulty. Nonetheless, drainage congestion reduced significantly in the local river for a few years.

Beel Kapalia is located adjacent to Beel Khuksia. News about the hardships suffered by locals during TRM implementation at Beel Khuksia soon spread through the area, and locals at Beel Kapalia became sceptical about the technocratic approach of BWDB. But the technical/bureaucratic elite were convinced about the superiority of their blueprints for Beel Kapalia. They ignored local opposition to various technical points in their plan, including the location of TRM breach-point. Support for TRM had also diminished amongst certain sections of the public: they feared loss of livelihood because of predatory behavior by the landed elite, during and after TRM implementation in the area. Local knowledge about the compensation-related problems faced by the locals of Beel Khuksia also increased opposition to TRM implementation in Beel Kapalia. BWDB did try to remove some of the deficiencies in its compensation mechanisms. But the public was not convinced. Therefore, BWDB was unable to implement TRM in Beel Kapalia. Violence broke out in the area just before implementation. The level of conflict witnessed was much higher than that witnessed in Beel Khuksia. Again, local WMGs were unable to resolve the conflict; nor was BWDB successful in mobilizing the local public in favor of TRM implementation.

4.3. TRM at Beel Pakhimara

TRM is currently on-going at Beel Pakhimara. Because of widespread opposition from certain sections of the local public, the initiation of the embankment-breach got delayed by four years. TRM planning at this beel too was technocratic in nature. Initial efforts at implementation were technocratic too – the local public was largely excluded from these initial efforts. Therefore, sections of the local public, especially marginalized communities were dead against the implementation of TRM in the area. Court cases were filed by them. BWDB retaliated by initiating criminal action against certain individuals. The Army too was brought-in to ease tensions. But to no avail.

Drawing on its experiences, BWDB decided on a change of action. The organizational culture within the organization had slowly changed over time. A new set of younger public officials had joined the organization: they were more open to engaging local public in governance-related decision-making. They also had access to national legal instruments which mandated public participation. However, earlier efforts in working with WMGs had not succeeded. Therefore, BWDB changed track and decided to work with a local civil society organization which had extensive experience in working with land acquisition and displacement issues. It had been working in the area for decades and was widely respected by the local public. This CSO was effective in social mobilization. Through a series of meetings and negotiations with the elite as well as the local public, a few marginalized communities who were going to be displaced by TRM were moved to a rehabilitation

village. The CSO began to work with the local public on sorting out compensation issues at the local office of the government Land department. Opposition to TRM was mitigated to some extent, and the embankment was finally breached in 2015. However, marginalized communities are dissatisfied by the changes brought about by TRM.

5. Discussion and conclusion

TRM implementation at Beel Dakatia and Beel Bhayna were characterized by participatory decision-making (Narayan-Parker, 1993; Steelman, 2001; Silver et al., 2002; Reed, 2008; Raymond et al., 2010). TRM implementation at Beel Khuksia and Beel Kapalia were characterized by technocratic decision-making (Steelman, 2001; Silver et al., 2002; Wilson, 2006; Reed, 2008; Raymond et al., 2010). All four implementations were characterized by conflict. CSOs and WMGs were associated with all four implementations in various forms (Gain et al., 2017; Mutahara, 2018). However, these organizations were not effective in conflict resolution at any of these four sites (Gain et al., 2019).

Like in Beel Kapalia, TRM implementation in Beel Pakhimara too was in danger of getting derailed because of conflict between the public and elite. What led to eventual implementation was course-correction by the bureaucratic/technical elite where-in a respected, local CSO was tasked with the specific goal of acting as a mediator between the local public and the elite. This CSO successfully mobilized the local public, arbitrated on behalf of certain marginalized communities and in the process bridged the gap between the elite and the local public. This role was not performed successfully by WMGs in Beel Khuksia and Beel Kapalia because they were not trusted by the locals: locals believed that the WMGs were acting in the interests of the elite.

In other words, in Beel Pakhimara, there appears to have been more willingness on the part of the elite to work with local public. There appears to have been a change in organizational culture. Public officials felt less threatened about losing control over outcomes while engaging with community organizations. The elite appear to have been more willing to negotiate with the local public: more willing to pay heed to their needs and also satisfy them. Therefore, the decision-making structure during TRM implementation at Beel Pakhimara appears to be tending towards sociocratic approach (Table 2).

As discussed earlier, sociocratic decision-making approaches (such as the sociocratic approach) tend to reduce conflict during planning and implementation. Conflict did get resolved¹¹ to a large extent at Beel Pakhimara; but, was not completely eliminated.

Therefore, for successful TRM implementation, public agencies in Bangladesh need to become sociocratic in their decision-making approach. But, a lot needs to change before the process can become truly sociocratic (Faludi and Korthals Altes, 1994, 1997; Faludi and Valk, 1994). Initially in Beel Pakhimara, like in other beels, the elite were high-handed in their approach and refused to engage with the public. For the process to be truly sociocratic, the elite has to be open to: (a) accessing local knowledge; (b) engaging with the public from the beginning of the planning process; and (c) negotiating with the public on contextually-relevant outcomes. Had the elite worked more collaboratively with the public, the initiation of TRM implementation might not have been delayed.

Nonetheless, this research reveals that conflict during TRM implementation can be successfully resolved by the development of conflict resolution mechanisms (Barnes and van Laerhoven, 2013; Barnes and van Laerhoven, 2015). Such mechanisms need not necessarily be played by local CSOs. But they will be effective only if they are locally-respected

¹¹ Breaching of the embankment became possible only after some of the initial conflict got partially resolved after the involvement of a third-party mediator. However, conflict continues to fester: over unresolved compensation issues, loss of livelihood and ambiguity over property rights to land within the beel (Gain et al., 2019).

and are also considered trust-worthy by the elite. The elite will become more receptive to engaging with the public if the culture in bureaucratic, technical or public organizations becomes more conducive to public participation (Reed, 2008).

Such changes in organizational culture may also lead to more openness amongst the elite to combine scientific knowledge with local knowledge (Reed, 2008). Research reveals that local knowledge can sometimes be accurate: locals may possess tacit knowledge about what works or does not work locally. Participatory decision-making derived from local knowledge was effective in Beel Dakatia and Beel Bhayna. However, technocratic decision-making supported by scientific knowledge was not as effective in Beel Khuksia. Nonetheless, scientific knowledge can complement local knowledge by capture the 'big picture': for instance, the effect of local TRM at the regional level. In other words, only when local knowledge is combined with scientific knowledge does decision-making become more effective (Ingram, 2008; Raymond et al., 2010).

This dispute about the importance of local vs. scientific knowledge gets compounded in the presence of power-differentials. Technocratic decision-making is characterized by large power differentials between the elite and the public (Steelman, 2001). Therefore, in sites characterized by technocratic decision-making, the elite may pursue their own self-interest which may be at odds with collective-interests or with the self-interest of marginal communities (Muthoor and Fischer, 2019). Participatory decision-making seeks to reduce such power-differentials (Reed, 2008). But sites characterized by participatory decision-making may get hijacked by the elite where-in marginalized communities are coerced to toe the majoritarian line. This may lead to "dysfunctional consensus" (Cooke and Kothari, 2001). In either case, marginalized communities bear the worst of consequences. But, since the marginalized often live very close to TRM implementation sites, they may possess tacit, local knowledge which is often ignored by the elite during planning and implementation (Wilson, 2006). The marginalized also may not feel inclined to share such knowledge with the elite (Muthoor and Fischer, 2019).

In other words, it is only when elites make a concerted effort to engage in more sociocratic forms of decision-making that conflict gets reduced, power-differentials get balanced and implementation becomes more effective (Faludi and Korthals Altes, 1994, 1997; Faludi and Valk, 1994). Nonetheless, additional research needs to be conducted for understanding the factors that may lead elites to actually engage in such decision-making.

Technocratic approaches that are based on the top-down imposition of linear processes are distrusted by locals and often lead to conflict, resulting in implementation bottle-necks. Under such circumstances, theorists recommend participatory approaches that tend to decrease the role of scientifically-sound, technocratic advice. In addition, local elites may side-line marginalized communities resulting in dysfunctional consensus. Implementation is again sub-optimum. The solution lies in legitimizing the motivations, knowledge and competencies of all stakeholders.

During land-use decision-making, different stakeholders have different motivations. Technocrats want to use their scientific knowledge and professional expertise to solve public problems. The public too wants to be actively involved in the decisions which affect their lives. If they cannot do so, they self-organize and they protest to make themselves heard. Local landed elites want to maximize their self-interest. It is only when all stakeholders sit together and channelize their individual motivations for maximizing the common-interest, that conflict amongst stakeholders eventually gets reduced, and it becomes easier to implement land-use projects. Successful implementation is characterized by circular forms of decision-making in which negotiations between elites and public are mediated, arbitrated and bridged by skilful, trust-worthy and open-minded entities willing to unify contrarian view-points.

Nonetheless, this article has identified a few additional areas for future research: first, additional research needs to be conducted on the

connection between land-ownership and implementation (Cieslak, 2019). How does landownership affect TRM implementation? How does landownership change post-implementation? How do such changes affect local social and ecological conditions? Does TRM increase marginalization of already-marginalized communities? How do they adapt to such circumstances? Second, additional research needs to be conducted on the role that community leaders play in implementation (Nath, 2018). Do they act as intermediaries and facilitate TRM implementation? Do they act against the interests of the marginalized? Third, differences exist amongst the elite and the public on how TRM should be planned and executed so that implementation issues (for instance, compensation and rehabilitation) are sorted out, costs are minimized (for instance, displacement and erosion) and benefits are maximized (for instance, productive land-use and drainage clearance). Differences also exist on how costs and benefits can be equally distributed across different groups of local stakeholders (Mutahara, 2018; Van Staveren et al., 2017). How do such differences affect TRM planning and implementation? Fourth, there is some evidence in the literature (Haque et al., 2013, 2015; Pokrant, 2014), that activities of communist parties and various national parties (see footnotes 5 and 9) may have affected conflict along the coastline in Bangladesh. Therefore, additional research needs to be conducted on how activities of such parties have affected the planning and implementation of TRM.

Such research assumes significance because this article has argued that effective planning and implementation of TRM requires a rethinking of the role of technocrats and the local public. Practises associated with TRM were developed by the locals so that they could control their destiny. Therefore, the initial acts of defiance by these stakeholders against elite-power were empowering for even the most marginalized of communities. They may have lacked expert engineering knowledge; but they knew their land, their water-bodies and their rivers better than the experts (Ingram, 2008); therefore in some ways, even the most of marginalized of locals were experts in their own right - planning and implementation issues arose because the elite failed to recognize this expertise. That is why this article has argued that land-use decision-making may become less conflict-ridden if planning and implementation is visualized as negotiation amongst experts: technocratic-experts and local-experts – mediated by conflict-resolution mechanisms, trusted by the locals and respected by the elites. The theory of conflict resolution in decision-making can be further developed by critically analysing how key features of conflict resolution (such as procedure of negotiation or mediation or stakeholder analysis) vary according to decision-making approaches (for instance see Bacow and Wheeler, 1984; Glasbergen, 1995; Susskind et al., 1999). This is an area for future research. Nonetheless, conflict resolution is not the only manner in which TRM implementation can be improved. Other possible reasons why TRM implementation has not been successful at the research sites may include the role of (a) decision-making variables like sequential downstream-to-upstream planning, (b) hydrological variables like appropriate design of peripheral embankment, (c) engineering variables like identification of appropriate duration for TRM implementation, or (d) socio-scientific variables like identification of appropriate compensation mechanisms. Additional research needs to be conducted for the proper design of such variables. Data collection for this article was completed by April 2019. Since, conditions at the research site are constantly changing, this article does not seek to analyze happenings at the research sites which took place after that period.

Competing interests statement

Jahin Shams is currently an employee of Uttaran, a non-governmental organization associated with the implementation of Tidal River Management in Bangladesh.

Acknowledgment

This research was funded by the Netherlands Organization for Scientific Research (NWO), grant number W.07.69.201. It is part of the Living Polders project, carried out by a consortium of partners. Living Polders is part of NWO's Urbanizing Deltas of the World (UDW) program. This article is based partly on research conducted by Jahin Shams for his Master Thesis at the School of International Development, University of East Anglia, UK. Research support was provided by Mondira Bardhan.

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