

Distributing flood shelters for disaster risk reduction

Author

Islam, Shafiqul, Chu, Cordia, Liew, Leong, Smart, James CR

Published

2019

Journal Title

Disaster Prevention and Management

Version

Accepted Manuscript (AM)

DOI

[10.1108/dpm-02-2019-0060](https://doi.org/10.1108/dpm-02-2019-0060)

Rights statement

© 2019 Emerald. This is the author-manuscript version of this paper. Reproduced in accordance with the copyright policy of the publisher. Please refer to the journal's website for access to the definitive, published version.

Downloaded from

<http://hdl.handle.net/10072/388504>

Griffith Research Online

<https://research-repository.griffith.edu.au>



**Distributing Flood Shelters for Disaster Risk Reduction:
Exploring the Practices in Bangladesh from a Political
Economy Perspective.**

Journal:	<i>Disaster Prevention and Management</i>
Manuscript ID	DPM-02-2019-0060.R3
Manuscript Type:	Research Paper
Keyword:	Disaster Risk Reduction, Political Economy, Flood Shelter Distribution, Bangladesh, DRR Fund Distribution

SCHOLARONE™
Manuscripts

Distributing Flood Shelters for Disaster Risk Reduction: Exploring the Practices in Bangladesh from a Political Economy Perspective

1. Introduction

The world is facing severe losses and increased challenges due to several types of disasters, particularly flooding. In response, researchers and practitioners are working for Disaster Risk Reduction (DRR). DRR is the process and practice of reducing disaster risk through effective planning and timely efforts to reduce the causal factors of disasters, considering vulnerability of place and local context (UNISDR, 2016). Effective implementation of DRR is, therefore, challenging for resource-scarce low- and middle-income countries (LMIC), such as Bangladesh, which is particularly vulnerable to disaster and climate change (IPCC, 2014). The LMICs face a dilemma in terms of how to achieve a balance between development allocation for rapid economic growth (including poverty reduction) and DRR investments with better governance. In this context, a political economy angle, specifically the questions around the resource-allocations for DRR, becomes crucial. As such, Bangladesh is an appropriate and interesting case study in this context.

As one of the world's most populous countries, Bangladesh faces significant disaster risk from annual floods, which inundate up to 70% of the country's land-mass (Sovacool, 2017). Despite many successes in dealing with disasters, Bangladesh faces several challenges surrounding DRR, including lack of capacity among actors and institutions (Alam et al., 2011), policy gaps (Choudhury et al., 2018), lack of collaboration, and coordination (Sovacool et al., 2018), lack of better governance (Bhuiyan, 2015), and inappropriate distribution of scarce funds (Islam, 2014, Mallick, 2014). These DRR challenges can be considered as problems of political economy (DFID, 2009, Mogue, 2015, Purdon, 2015) because they concern the distribution of resources, and interactions among stakeholders (Sovacool *et al.*, 2018). More research is required to improve understanding of how best to address the challenges in DRR from different perspectives, such as different country settings and sectors. Therefore, the main objective of this study is to explore the challenges surrounding DRR in Bangladesh from a political economy perspective and to explore practices of the political economy nexus in DRR with the hope that this will enable existing obstacles to be better addressed.

1
2
3 By investigating the political economy of DRR in Bangladesh, this study intends to make
4 two contributions. First, severe consequences of natural hazards can be exacerbated by man-
5 made factors, such as socio-political influence, and thus it is necessary to understand the
6 pathways through which these factors affect DRR (Sovacool, 2017). Existing literature **focuses**
7 on issues, for example, **the** assessment of how governments spend less on DRR efforts
8 (Neumayer et al., 2014), and the interplay of socio-political actors surrounding political
9 ecology and DRR (D'Alisa and Kallis, 2016). **This** study aims to enrich this literature by
10 offering a political economy analysis on the distribution of public funds for DRR in Bangladesh
11 through an examination of the key political economy factors—actors interests and incentives,
12 institutions, values and ideas (DFID, 2009, Sovacool *et al.*, 2018, Williams, 2011) in DRR
13 initiatives.
14
15
16
17
18
19
20
21
22

23 Second, the literature related to DRR centres around vulnerability mapping and guiding
24 future DRR strategies (Mitchell T *et al.*, 2012, Prabhakar *et al.*, 2009, Kato, 2010). DRR
25 initiatives and efforts may lead to competition among influencing actors, and these actors might
26 sway the efforts to advantage their own political and economic benefits (Sovacool, 2017).
27 Therefore, **this study aims to examine the empirical, political, and economic processes**
28 **surrounding distribution of funds in the context of DRR in Bangladesh.**
29
30
31
32
33

34 Based on an analysis of a mix of original in-depth interviews (IDIs), official documents,
35 and a comprehensive literature review, this study explores a number of factors including the
36 presence of interests and incentives of influencing stakeholders, institutions, and the values and
37 ideas (ideological, and religious) that **potentially** underlie decisions regarding the distribution
38 of funds for DRR in Bangladesh. The next two sections describe the conceptual approach, case
39 selection, and research methodology. Results, discussion, and conclusion follow thereafter.
40
41
42
43
44
45
46
47

48 **2. Conceptual approach: DRR and Political Economy**

49

50
51 Disaster Risk Reduction (DRR) involves multifaceted efforts, including prevention,
52 preparation, response, recovery, rehabilitations, and reconstruction (Choudhury *et al.*, 2018).
53 These efforts connects several actors, government institutions, funding mechanisms, and
54 development agendas (UNISDR, 2015). Globally, UNISDR and DRR-related guidelines, such
55 as the Hyogo Framework-2005 and the Sendai Framework-2015 outlined ways to reduce
56 vulnerability, to increase resilience and to decrease loss and damages. However, despite the
57
58
59
60

1
2
3 DRR efforts in many countries, a **diverse** range of challenges rise for each country and context,
4 including: lack of capacity among actors and institutions, lack of coordination, inappropriate
5 funding mechanisms, and governance failures (Schipper, 2009, Sovacool, 2017, Mallick,
6 2014). Some specific contextual examples are: struggles in involving multi-level stakeholders
7 in decision making in the Caribbean (Davis *et al.*, 2011), challenges in public sector
8 collaboration and partnership for DRR in the UK (Hemingway and Gunawan, 2018), barriers
9 in disaster risk governance in Africa (Van Niekerk, 2015), and hardship in mainstreaming DRR
10 in various sector of Indonesia (Djalante and Thomalla, 2012). Prior studies have also been
11 concerned with factors affecting the government funding allocation process in different regions
12 and sectors. Among early studies, Cox and McCubbins (1986) argue that politicians generally
13 give priority in distributing public funds to their supporter groups that vote mainly for them.
14 However, Londregan (1996) notes that politicians tend to distribute funds to those who are
15 ideologically indifferent to candidates in order to attract swing voters.

16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
Literature argues that the DRR-related funds need to be distributed to disaster affected people and locations considering their poverty, vulnerability, loss and damages (Sawada and Takasaki, 2017). Disaster fund allocations for alleviating poverty in China (Cao *et al.*, 2016), for reducing disaster losses in Wenchuan (Xie *et al.*, 2018), for the cause that affected community are most in need (Bailey and Harvey, 2015), for house-building for the poor (Freeman, 2004), and for the recovery of the flood-vulnerable population (Muñoz and Tate, 2016) are some of the arguments in the literature. Literature also points out highly populated area are more vulnerable and they need more funds (Hallegatte *et al.*, 2018). The Hyogo framework-2005, and the Sendai framework-2015 also suggest that flood-prone, cyclone-prone or other disaster-prone areas, and locations with high poverty rate, need to receive more funds (UNISDR, 2005).

However, in practice, it appears likely that the distribution of DRR funds is likely to be influenced by political economy factors in several ways. The term ‘political economy’, in a broader sense, deals with the **interactions** between government and private sector (Gilpin, 2016). It involves the study of the power-struggle by which resources are distributed, and how some actors benefit from a particular process at the exclusion of others (Caporaso and Lavine, 2005). The power struggles also compete over DRR-related public funds, and thus wider complex environment for sustainable DRR efforts matter in reality (Alam *et al.*, 2011). Similarly, Mogue (2015) has shown that the underlying interests and incentives of influencing actors and institutions within the sector influence decision making regarding fund distribution.

1
2
3 By comparing disaster fund spending and election results, Healy and Malhotra (2009) showed
4 that some voters are rewarded by the party in power. (Francken *et al.*, 2012) also found that in
5 Madagascar governments' relief distribution is subject to political influences. Other literature
6 also covered political economy in DRR-related actions, such as excluding weaker sections of
7 society from relief (Jha, 2015). Therefore, based on the above studies, a political economy
8 analysis is well equipped to further explore the challenges confronting the DRR sector in
9 Bangladesh.

10
11
12
13
14
15
16 Among many issues, political economy analysis deals with interactions of influential
17 stakeholders and resource distribution mechanisms (Amable *et al.*, 2019). The political
18 economy analysis in this study focuses the stakeholders and resource distribution processes
19 surrounding DRR. DFID (2009) and Serrat (2017) identified three major uses of political
20 economy analysis: (a) macro-level country analysis— understanding general sensitivity to
21 country, context, and broad political-economy environment; (b) sector-level analysis— to
22 identify specific barriers to and opportunities for effective delivery of desired outcomes within
23 particular sectors; and (c) problem-driven analysis— to understand and, if possible, resolve a
24 particular problem at the project level This study conducts a combination of the latter two—
25 (b) and (c). For this Bangladesh case, the political economy analytical approach (Mogues,
26 2015, Purdon, 2015, DFID, 2009) focuses on three factors that influence decisions regarding
27 allocation of scarce resources for DRR. These factors are: interests and incentives of
28 influencing stakeholders; the role of formal and informal institutions; and ideological and
29 religious values

30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
Interests and incentives shape individual and organised group decisions (Laffont, 2000)
which depend on personal motivations, and opportunities arising from the economic and
political relationships (DFID, 2009). In such situations, well-connected and powerful
stakeholders can use government mechanisms for funding allocations as an opportunity to grab
benefits for themselves excluding others (Sovacool, 2017). Institutions, both formal and
informal, comprise the rules, norms, committees, and conventions for directing interaction
among people (Mogues, 2015), they may thus aggravate power struggle, and influence
decision-making power (Clever, 1998). The values, and ideas of influential elites such as
ideologies, religious beliefs, cultural values, knowledge, mindsets and local perception impact
on decision around public issues, and thus, may facilitate or hinder effective implementation.
(DFID, 2009, Purdon, 2015).

1
2
3 Based on the conceptual approach (Figure-1), this study focuses on exploring the process and
4 practices of DRR funding distribution in Bangladesh.
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31

Figure-1 above here.

3. Case Selection, and Research Methodology

3.1 Bangladesh

32
33
34
35
36
37 Bangladesh was selected for this case study because of its extreme vulnerability to
38 climate-induced disasters such as flooding. It is a riverine country with low lands that are highly
39 flood-prone (Mirza, 2002). Annual floods inundate about one-fourth of Bangladesh to varying
40 degrees (IPCC, 2014). Floods in Bangladesh were responsible for thousands of deaths, along
41 with large loss of resources in 1974, 1988, 1998, 2004, and again in 2007 (Government of
42 Bangladesh, 2014). Rasid and Paul (1987) demonstrated that Bangladesh is subject to several
43 types of floods: rainwater floods, riverine or tidal flood, flash-flood, and cyclonic or storm
44 surge floods. We use the term 'flood' in this article as a catch-all for all types of inundation.
45
46
47
48
49
50

51
52 In general, these flood types affect different regions, though some overlapping occurs
53 (Mirza, 2002). District-wise hazards zones have been identified in Bangladesh where almost
54 53 of 64 districts are vulnerable to different types of floods. (Barua *et al.*, 2016). Large volumes
55 of water are sourced from the hills of India and flow to the major rivers of Bangladesh including
56 the Ganga-Brahmaputra basin area and submerge other river banks. Rainwater floods occur
57
58
59
60

1
2
3 because of heavy precipitations, and these affect almost all districts of Bangladesh, most
4 severely in the northern areas of Bangladesh(Choudhury *et al.*, 2018). Flash flooding occurs
5 mainly along the eastern and north-eastern areas of Bangladesh due to presence of hill streams
6 (Choudhury, 2015). Cyclonic floods are caused by tropical cyclones in the Bay of Bengal and
7 affecting coastal regions of Bangladesh (Paul and Mahmood, 2016). Monsoon rainwater floods
8 set in for long periods, whereas, flash floods remain for short periods: both cause multifarious
9 loss and damage (Rasid and Paul, 1987). However, some low-land areas, which suffers both
10 from flash-flood or rainwater floods are subject to vast sufferings and losses(Paul and
11 Mahmood, 2016). In short, flooding causes enormous loss of life, damage to crops, and
12 disruption to infrastructure and other property.
13
14
15
16
17
18
19
20
21
22
23

24 Figure-2 above here
25
26
27
28

29 **3.2 Construction of flood shelter in flood-prone areas**

30 The Bangladesh Government has clearly stated national level policies that specify how
31 DRR funds should be allocated, depending on whether a region is disaster-prone or not (DDM,
32 2016, pp. 6-7). The policies also stipulate that the area size, the population size and the poverty
33 rate of a location need to be considered when determining which locations will be given priority
34 in receiving funds(Ministry of Disaster Management and Relief, 2012, Article 27, Ministry of
35 Disaster Management and Relief, 2010). The Bangladesh poverty reduction strategy papers
36 incorporated disaster management to ensure the safety of children, women and other victims at
37 the time of disasters (Planning Commission of Bangladesh, 2012, pp. 47-48). The National
38 Plan for Disaster Management, 2010-15 emphasised the construction of flood shelters in flood-
39 prone areas of Bangladesh (Ministry of Disaster Management and Relief, 2010, pp. 10-12).
40 The Disaster Management Act-2012 stipulate the requirement to construct shelters (Ministry
41 of Disaster Management and Relief, 2012, article 21). Following this Act, the Disaster
42 Management Policy- 2015 also has detailed the necessity for flood shelters in low-lying lands,
43 river-erosion prone and flood-prone areas (Ministry of Disaster Management and Relief, 2015,
44 policy no. 3.2). The main objective stipulated in the project proposal of the ‘construction of
45 flood shelter project’ is as follows: “contributing to the national economy through reducing
46 disaster risk and loss and damage in flood-prone and river-erosion prone areas of Bangladesh.
47 Specific goals are “giving shelter to flood-affected people, securing animals and other
48
49
50
51
52
53
54
55
56
57
58
59
60

resources, using shelters as educational institute when there is no flood”(Ministry of Disaster Management and Relief, 2008, P. 1).

Bangladesh has taken many initiatives, efforts, projects, and programs for effective DRR. Under the DRR umbrella, this case study focuses on DRR programs that are named ‘Construction of flood shelters in flood-prone areas’ implemented by the Department of Disaster Management (DDM) within the Ministry of Disaster Management, and Relief since 2008. So far, 99 shelters have been built, and 173 more shelters are currently being implemented (DDM, 2016). This research uses a political economy approach to examine why, and how the locations for these shelters are selected, which necessarily also determines who benefits from these DDM investments.

3.3 Research design and study population

This study applied a qualitative research methodology following an exploratory case study approach (Yin, 2011), which empirically investigates practices surrounding DRR fund distribution for flood shelters. To address research question and objectives, a total of 38 in-depth interviews (IDIs) were conducted with stakeholders in DRR in Bangladesh (Table-1) in lieu of covering all key informants around DRR. Participants were purposefully recruited based on their connection to DRR using a snowball-sampling method(Noy, 2008). The study was conducted in Dhaka, in the Sunamganj districts, and the Shalla subdistricts in Bangladesh. The area including the Sunamganj district and Shalla subdistrict is one of the most flood-affected (both flash-flood and river/rain flood), and remote area of Bangladesh (Bangladesh Bureau of Statistics, 2015). In Dhaka, an in-depth interviews were conducted with key stakeholders of DRR including central decisionmakers, officials and researchers. At district, and subdistrict levels, IDIs were conducted with community leaders, local government representatives, local level officials, and local politicians connected to disaster or flood shelter-related projects. By utilising two groups of informants from DRR, we were able to compare and contrast different stakeholder’s perspectives.

Table-1 above here

3.4 Data Collection and analysis

Official documents and policies relevant to flood shelter distribution and statistical reports on socio-demographic data of districts and sub-districts were collected. The researcher also conducted 38 in-depth interviews (IDIs) in Bangladesh in Bengali between April 2016 and April-2018. The duration of most of the interviews was between 30 minutes and one hour. The principal researcher translated all interview recordings and transcribed them into text documents. This study received ethical approval from the Griffith University Human Research Ethics Committee (2017/446). Consent was requested and given before each interview.

The study used a qualitative thematic method to analyse the IDI transcripts. By reading the transcript, familiarisation with the data was achieved. Then the transcripts were coded to achieve intercoder reliability. Researchers developed a code list and identified DRR-related themes. Using themes, the framework was developed, and then finalised by considering the findings, and emergent themes as per the back-and-forth process of qualitative data analysis. Data were managed by using NVIVO software 11 version.

4. Results

This section has two subsections. Based on secondary data (collected official documents and other statistical reports), subsection 4.1 demonstrates the amount of DRR funding distribution to the districts of Bangladesh with a comparison of district's population size, area, poverty rate, and number of disaster-affected households. Subsection 4.2 based on IDIs, illustrates the explored reasons for observed DRR fund distribution.

4.1 DRR fund allocation criteria, and distribution practices

Inspecting the list of 272 flood shelters, and visiting some of the rural shelters, we scrutinised the content of the list, the name, and the title of the projects compared to the location, and objectives of the projects in different districts. Literature (section 2.1) and current Bangladesh government policies (section 3.2) clearly stated that allocations of DRR funds need to be based on the size of population, area, poverty rate and disaster vulnerability of the areas under consideration.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

However, Figure -3 and Table -2 drawn from official records of allocation shows that the most highly-populated districts, the most poverty-stricken districts, the largest districts by area, and the most flood-affected districts often did not receive the greatest number of flood shelters between 2008 and 2017. Some districts such as Kurigram received a portion of total DRR fund allocations that is consistent with policy, whereas some districts such as Sunamganj (most disaster-affected area) did not receive the level of allocation mandated by policy. Similarly, Kishoreganj district received the highest number of shelters deviating from all the mandatory criteria mentioned above. Some discrepancies from stated policy were clearly evident in the location selection of the shelters. The existing guidelines and rules often appear to have been ignored. Moreover, despite local needs necessitating distinct shelter design, low land areas, hill areas and coastal areas all shared the same design. Therefore, as expected, some of the flood shelters submerged in the flood of 2017. Moreover, in some cases, although the local population argued for building the shelters on higher ground, because of resource shortage, they could not be implemented in that way. The reasons for these kinds of inappropriate allocations are revealed in the in-depth interviews with stakeholders and are discussed in the next sections.

Table-2 above here

Figure-3 above here

4.2 Political economy in public spending on DRR: stakeholders' views

4.2.1 Exposed interest, and incentives of influencing actors in DRR fund distribution

DRR initiatives depend on funding, which is managed, directed, and distributed by decision makers including officials of international organisations, national political leaders, bureaucrats, public representatives, and local leaders in Bangladesh (Alam *et al.*, 2011). Several interviewees claimed that the distribution of funds for DRR was often executed without regard to local needs, but rather reflected the interests, and incentives of the decision-makers. One official explained:

“sometimes it happens that local MP, and local political, and social elites decide, and influence the distribution of a flood shelter to a specific location. When local elites select the location, they see the interest of local party leaders, the next election issue, and benefits of own relatives.”

Allocations from DDM, are intended to address the DRR issues in accordance with specified criteria clearly stated in the policies. However, deviations from criteria-based allocation often were apparent. One local public representative stated:

“We have to fulfil or satisfy local, and union-level leaders. Local MPs might have an agenda of trying to convince voters and supporters. So informally, flood shelters distribution and location selections deviate for various reasons other than the issue of real needs.”

These practices create gaps between the local government representative or community leaders and national political leaders. Although interviewees stated that the flood shelters are distributed to areas of political supporters. Those areas are also to some degree vulnerable to disaster. However, literature emphasises that these shelters needs to be distributed to the most vulnerable locations where the most affected people could benefit with equality and equity (Islam *et al.*, 2017, Muñoz and Tate, 2016).

Moreover, highly positioned stakeholders can manipulate the government apparatus of the allocation process as a mechanism for capturing project benefits. One of the rural local subdistrict leaders shared his view:

“We live in a very rural area; we do not have education, we do not know the procedures how to apply, cannot go to the capital city, and cannot manage funds. So,

we receive fewer allocations than the subdistricts where advanced educated, and clever people live. Although our district is the most flood affected region, we receive only three flood shelters whereas other received more than 20 flood shelters”.

Consequently, IDIs with respondents from all tiers of the system make it evident that the interests and incentives of powerful influential stakeholders sometimes influence and deviate the selection of location and beneficiaries, deviating from stated policies. These processes lead to the exclusion of vulnerable people and locations, and inefficient use of resources; consequently those practices need to be curbed (Sovacool *et al.*, 2018). Therefore, practitioners should ask the question ‘whose interest is served really by the effort’ and should ensure that the answer is always ‘affected vulnerable people’s interest’

4.2.2 Exposed formal, and informal institutions in DRR fund distribution

Existing rules, policies, and norms influence the DRR fund distribution process. Although, policies stipulate a comprehensive assessment process and needs-based design, these are often not followed when funds are being distributed, and locations and beneficiaries are selected. The Planning Ministry sanctions approvals; and then ministries implement strategies through local offices. Thus, if there is need for any change because of local requirements, it is very difficult to change or to implement. One DRR consultant shared his opinion on this:

“.....one example flood shelters, the design of which was same for hill districts and for low land districts. The design could not be changed at the final stage of implementation as per local needs because of this top down approach”.

Informal norms also influence decisions. Some interviewees also indicated that local leaders are interested only in short-term visible projects, which have an immediate impact rather than long-term effectiveness. For example, nationally, the DDM funds are managed and distributed by the members of the National Disaster Management Committee and the district and subdistrict level committees. One IDI interviewee stated:

“some ministers and bureaucrats are members of the relevant committees, so many of the flood shelters are distributed in their own area. The distribution should have been to the regions that are most vulnerable, and most in needs.”

However, one IDI interviewee (an official of DDM) mentioned that

1
2
3 “actually, we do not have vulnerability assessment for disaster or climate change
4
5 countrywide. Though some pilot projects were accomplished, the countrywide
6
7 vulnerability assessment for each districts and sub-districts has yet to be conducted.”
8
9

10 One may argue that the powerful decision makers thus become able to take the
11
12 advantage of ‘not having vulnerability assessment report for all subdistricts’ and use their
13
14 discretion to maximise their own electoral purpose in DRR fund distribution (Adams and
15
16 Neef, 2019). However, although Bangladesh yet does not have a nationwide vulnerability
17
18 assessment, it has the list that indicate whether a district is flood-prone or not, and cyclone-
19
20 prone or not (Bangladesh Bureau of Statistics, 2015). In the absence of full national
21
22 assessment, these lists can still provide valuable guidance regarding a needs-based
23
24 assessment for selecting a flood-shelter location.

25 Moreover, similar issues also arise at the local level. Socially and economically marginal
26
27 people often do not have voice in important DRR-related decision making. Social norms work
28
29 informally (Helmke and Levitsky, 2004). One local government representative expressed his
30
31 reality:

32
33
34 “At the local level, normally, we divide based on needs. However, some
35
36 exceptions are there. For example, a chairman of the local government is from a
37
38 village, so he often allocates more for his own village.”
39

40 Therefore, interviews shows that the influences of both formal and informal institutions
41
42 are apparent in the DRR processes, and these can steer funding allocation away from vulnerable
43
44 locations and lead to resources being distributed to the areas of dominant elites. That does not
45
46 mean that some of those who are receiving funds are not vulnerable. However, the more
47
48 vulnerable disaster affected people often appear to have been excluded and the power of
49
50 dominant stakeholders may well be evident through the political economy in the distribution
51
52 mechanisms (Adams and Neef, 2019, Sovacool *et al.*, 2018).
53

54 4.2.3 Exposed values and ideas of influencing stakeholders in DRR fund distribution

55 The values and ideas of decision makers impact on the outcomes (DFID, 2009). Political
56
57 ideas, beliefs and immediate incentives affect decisions (Purdon, 2015). One local government
58
59 official revealed the practices of DRR in Bangladesh:
60

1
2
3 “Sometimes if the people of the disadvantaged and vulnerable location, which is
4 mostly flood-affected, have different political beliefs, are not supportive of the party
5 in power, they do not receive the flood shelters”.

6
7
8
9 Not infrequently, the number of beneficiaries is increased to satisfy more people with the
10 same political belief as the party in power. As one interviewee from an international
11 organisation said:
12

13
14
15 “We have provided funds for house-building for 10,000 families in the northern
16 area of Bangladesh. The designs of the house buildings were done based on recent
17 flood levels, and probable climate changes. However, in reality, local political leaders
18 divided this fund between 20,000 families. They increased the number of beneficiaries
19 to satisfy more political supporters”.

20
21
22
23
24
25 Consequently, the quality, and design of the houses will not be up to the desired
26 standard. Moreover, on the implementation side, differences in religious beliefs also can
27 lead to inequalities in fund distribution for DRR. One local-level officials shared his
28 opinion.
29

30
31
32 “If the local leaders, public representatives, and Member of Parliament are from
33 a particular religious group, the community of that particular religious group receives
34 priority. For example, if the leaders are from Hindu religion, the temples receive more
35 funds; if the leaders are Muslim, mosques receive more funds.”

36
37
38
39
40 However, another IDI interviewee (one local political leader) did not agree with this
41 assertion. He noted:
42

43
44
45 “We need more funds to satisfy all affected people and cover all vulnerable
46 locations. As we receive less than the actual requirements, we have to be selective, so
47 some people are excluded.”
48

49
50
51 Overall, however, the IDIs suggest that the values and ideas of leaders and decision
52 makers affect the distribution of funds, and selection of locations and beneficiaries and they
53 sometimes exclude vulnerable locations and people who hold different political and religious
54 ideologies. Although the influence of values and ideas is not visible, they are felt and observed
55 as expressed through the IDIs. Tension between economic, religious, political beliefs; tension
56 between short-term and long-term visions of the future; and tension between local and national
57
58
59
60

1
2
3 domination influence the DRR funding distribution in Bangladesh (Alam *et al.*, 2011,
4 Sovacool, 2017).

5. Discussion

6
7
8
9
10 This paper aimed to explore the challenges **confronting** DRR from a political economy
11 perspective, using a case of DRR-related public fund distribution, particularly the construction
12 of flood shelters in Bangladesh. **National DRR-related policies and guidelines regarding the**
13 **“construction of flood shelters”, clearly state that more funds should have allocated to locations**
14 **with higher populations, larger area, the highest number of disaster-affected people (low land**
15 **areas and riverine areas) and the highest poverty rate.** However, the distribution of flood
16 shelters often has not conformed with these criteria (Table-2 and Figure-3). **IDIs with relevant**
17 **stakeholders suggest it is likely that political economy factors have often affected the**
18 **distribution of funding and selection of location and beneficiaries. These findings suggest** how
19 the interest and incentives of influential decision makers, formal and informal institutions, and
20 values and ideas manifest at multiple sites across various stakeholders of DRR in Bangladesh
21 **have caused funding allocations to deviate from stated policy.**

22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
Through IDIs, this study found that the political economy surrounding DRR transcends
national, and local levels. At the national level, national decision makers through national
systems and actions have reoriented efforts toward boosting their political, and financial
interests and protecting and rewarding their supporters. Moreover, there is a cycle in
interactions among the different political economy processes. Interest and incentives of
powerful decision makers can lead to the use, and misuse of formal/informal institutions and
values and ideas and vice versa. Furthermore, because of such political economy influences,
DRR initiatives, project, programs, and interventions undertaken in Bangladesh, such as flood
shelters, often result in overlapping and inefficient use of resources.

Literature also similarly argued that political economy factors influence the efforts of
disaster risk reduction. Some examples are earthquake management in Turkey (Pelling and
Dill, 2010), the influence of elites in DRR governance in developing countries (Hamdan, 2015),
exclusion of powerless populations in flood management in Bihar of India (Jha, 2015), interests
of the actors in foreign aid for relief (Cohen and Werker, 2008), conflict of interest in
decentralisation of disaster risk reduction for local governments (Scott and Tarazona, 2011),
power struggle and inequality in disaster recovery (Sovacool, 2017, Sovacool *et al.*, 2018), and
the role of decentralisation in building community resilience in Bangladesh (Choudhury *et al.*,

1
2
3 2018). Using the case of Bangladesh, this study has contributed the knowledge by
4 demonstrating from the IDIs that- contrary to the guidance of existing policies, the political
5 economy factors often appear to influence the fund distribution and determine the DRR funding
6 amount and selection of location and beneficiaries.
7
8
9

10
11 Now the question remains why these dominating stakeholders do what they do. By
12 potentially manipulating distribution of public fund, as IDIs suggest, dominating stakeholders
13 may seek to maximise personal benefits and electoral gains, increase their support-base and
14 party affiliations (Francken *et al.*, 2012, Scott and Tarazona, 2011, Healy and Malhotra, 2009).
15 Improper distribution mechanisms, lack of better governance in funding, and existing practice
16 of not involving vulnerable communities in the decisions perpetuate these mal-practices
17 (Sovacool *et al.*, 2018, Choudhury *et al.*, 2018). This suggests that strengthening governance
18 and increasing involvement of vulnerable communities should help to mitigate the incidence
19 of adverse outcomes; implementing such improvements in practice remains challenging,
20 however, for LDICs like Bangladesh.
21
22
23
24
25
26
27
28

29 Alternatively, one explanation why flood shelter funding was not allocated to the
30 appropriate locations, is the shortage of funds themselves; fund shortages lead to some
31 deserving locations missing out. That may partly explain why influential decision makers,
32 when confronted with the conflicting needs and scarce funds, apparently allocate more shelters
33 to their electoral areas to satisfy their supporters. If funding resources were not scarce, political
34 economy factors would have little influence in Bangladesh. Another possible explanation is
35 that although the political economy nexus of DRR can sometimes manipulate projects for the
36 interests of dominant stakeholders, it does not mean that they fully undermine all the benefits
37 of DRR. The findings shown here eliminate an alternative hypothesis on public fund
38 distribution, as Besley and Coate (1997) demonstrated a model in which citizens vote based on
39 their own party-preferences; not thinking about future allocation of funds on specific issues.
40 However, the shortcomings found in this study can be used for improving and learning so that
41 DRR funds are distributed more effectively to vulnerable locations and affected communities.
42
43
44
45
46
47
48
49
50
51

52 Lastly, even though pressures from political economy factors exist in some Bangladeshi
53 DRR efforts, this does not necessarily mean that such factors are always present. Bangladesh
54 should continue its efforts in DRR, given that many DRR projects seem to be producing a net
55 social and economic benefit despite the complex Bangladeshi political economy process
56 surrounding them (Alam *et al.*, 2011). Thus, it is clear that not every DRR project perpetuates
57
58
59
60

1
2
3 inequality, excludes disadvantaged stakeholders, or often benefits the powerful (Sovacool,
4 2017). DRR practitioners should be aware of adverse outcomes arising from the political
5 economy process and as far as practicable within the constraints they face should take
6 appropriate mitigation actions.
7
8
9

10
11 While we hold that the results and findings from this case study from Bangladesh remain
12 valid and interesting and that lessons can be learnt from this, it is likely that some of these
13 findings can be generalised to other low-income resource-constrained countries that share the
14 socio-economic-cultural features of Bangladesh. Notwithstanding this limitation, we argue that
15 this Bangladesh case study sheds light on the existing political economy nexus and practices
16 surrounding the DRR-related public fund distribution.
17
18
19
20
21

22 6. Conclusion

23
24 The political economy perspective adopted by this study has revealed key issues, which
25 likely underlie many of the practical challenges encountered in effective DRR implementation.
26 Plans which appear sound on paper, can be tremendously challenging to implement in field
27 level contexts, as found in the distribution of DRR-related public funds, and selection of
28 location and beneficiaries. IDIs suggest that political economy factors influence DRR in
29 Bangladesh, and they need to be recognized as doing so.
30
31
32
33
34
35

36 Now the question remains what to do next. The researchers of this study advocate for
37 four measures (revealed in the results section). The first step is to conduct a country wide
38 vulnerability assessment for each district and sub-districts and then to make these vulnerability
39 assessments a mandatory input to funding allocation decisions (Sawada and Takasaki, 2017).
40 The second is to strengthen existing policies and institutions surrounding DRR fund
41 distribution so that the dominant stakeholders are compulsorily bound to follow them strictly
42 (Barua *et al.*, 2016, Bhuiyan, 2015). The third is to place vulnerable groups and the DRR
43 community front and centre in DRR processes. This includes sharing of ideas and knowledge
44 to and from the affected community, and accepting their reactive responses involved in DRR
45 funding mechanisms (Cook and Zurita, 2016, Choudhury, 2015). The fourth step is to ensure
46 coordination and cooperation between the local and national offices, between local government
47 representatives and national politicians strictly following the clearly-stated existing policies for
48 DRR fund distribution (Hallegatte *et al.*, 2018, Hemingway and Gunawan, 2018). In this
49 regard, comprehensive planning and prioritising of disaster risk issues can expedite cooperation
50 and coordination to reduce the overlapping and inefficient use of resources, and to ensure
51
52
53
54
55
56
57
58
59
60

1
2
3 distribution of DRR fund to the appropriate locations. **These four steps can enhance governance**
4 **procedures to restrain more blatant expression of self-interest.**
5
6

7 The practical insights from political economy surrounding local dynamics found in this
8 study should serve as a guide to stimulate policy makers and practitioners and can assist them
9 in taking the steps required to foster effective, systemic and successful DRR implementation.
10 The broader political and economic environment in which practitioners are working should not
11 be put aside. It is necessary to understand these political economy nexuses and conduct further
12 research on comparisons between the political economy of DRR and the political economy of
13 other areas such as climate adaptation or the education sector to assist in furthering our
14 understanding of which conditions are unique to DRR projects. More research on this critical
15 yet delicate nexus surrounding DRR on a case by case basis could identify effective solutions.
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

7. References

- Adams, C. and Neef, A. (2019), "Patrons of disaster: The role of political patronage in flood response in the Solomon Islands", *World Development Perspectives*, p. 100128.
- Alam, K., Shamsuddoha, M., Tanner, T., Sultana, M., Huq, M.J. and Kabir, S.S. (2011), "The Political Economy of Climate Resilient Development Planning in Bangladesh", *IDS Bulletin*, Vol. 42 No. 3, pp. 52-61.
- Amable, B., Regan, A., Avdagic, S., Baccaro, L., Pontusson, J. and Van der Zwan, N. (2019), "New approaches to political economy", *Socio-Economic Review*.
- Bailey, S. and Harvey, P. (2015), "State of evidence on humanitarian cash transfers", *Overseas Development Institute Background Note*.
- Bangladesh Bureau of Statistics (2015), "Bangladesh: Disaster Related Statistics 2015, climate change and natural disaster persepective. ", available at <http://www.bbs.gov.bd/> (accessed 31 December 2016).
- Barua, U., Akhter, M.S. and Ansary, M.A. (2016), "District-wise multi-hazard zoning of Bangladesh", *Natural hazards*, Vol. 82 No. 3, pp. 1895-918.
- Besley, T. and Coate, S. (1997), "An economic model of representative democracy", *The Quarterly Journal of Economics*, Vol. 112 No. 1, pp. 85-114.
- Bhuiyan, S. (2015), "Adapting to Climate Change in Bangladesh Good Governance Barriers", *South Asia Research*, Vol. 35 No. 3, pp. 349-67.
- Cao, M., Xu, D., Xie, F., Liu, E. and Liu, S. (2016), "The influence factors analysis of households' poverty vulnerability in southwest ethnic areas of China based on the hierarchical linear model: a case study of Liangshan Yi autonomous prefecture", *Applied Geography*, Vol. 66 pp. 144-52.
- Caporaso, J.A. and Lavine, D.P. (2005), *Theories of Political Economy*, Cambridge University Press, New York.

- 1
2
3
4 Choudhury, M.-U.-I. (2015), "Wetland-community resilience to flash flood
5 hazards (Bonna) in Sunamganj district, Bangladesh".
6
7 Choudhury, M.-U.-I., Uddin, M.S. and Haque, C.E. (2018), "'Nature brings us
8 extreme events, some people cause us prolonged sufferings": the role of
9 good governance in building community resilience to natural disasters in
10 Bangladesh", *Journal of Environmental Planning and Management*, pp.
11 1-21.
12
13
14
15
16
17 Cleaver, F. (1998), "Incentives and informal institutions: Gender and the
18 management of water", *Agriculture and Human Values*, Vol. 15 No. 4, pp.
19 347-60.
20
21
22
23 Cohen, C. and Werker, E.D. (2008), "The political economy of "natural"
24 disasters", *Journal of Conflict Resolution*, Vol. 52 No. 6, pp. 795-819.
25
26
27 Cook, B.R. and Zurita, M.d.L.M. (2016), "Planning to learn: an insurgency for
28 disaster risk reduction (DRR)", *International Journal of Disaster Risk*
29 *Reduction*, Vol. 19 pp. 265-72.
30
31
32
33 Cox, G.W. and McCubbins, M.D. (1986), "Electoral politics as a redistributive
34 game", *The Journal of Politics*, Vol. 48 No. 2, pp. 370-89.
35
36
37 D'Alisa, G. and Kallis, G. (2016), "A political ecology of maladaptation: Insights
38 from a Gramscian theory of the State", *Global Environmental Change*,
39 Vol. 38 pp. 230-42.
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
- DDM, D.o.D.M. (2016), "Construction of Flood Shelter", available at
<http://www.ddm.gov.bd/site/page/2b4dff73-562d-4708-8212-85507d22d0a8/%E0%A6%AC%E0%A6%A8%E0%A7%8D%E0%A6%AF%E0%A6%BE-%E0%A6%86%E0%A6%B6%E0%A7%8D%E0%A6%B0%E0%A7%9F%E0%A6%95%E0%A7%87%E0%A6%A8%E0%A7%8D%E0%A6%A%E0%A7%8D%E0%A6%B0> (accessed 01 April, 2018).

- 1
2
3
4 DFID (2009), "Political Economy Analysis How To Note", in Department for
5 International Development, A DFID Practice Paper. London.
6
7 Djalante, R. and Thomalla, F. (2012), "Disaster risk reduction and climate
8 change adaptation in Indonesia", *International Journal of Disaster*
9 *Resilience in the Built Environment*, Vol. 3 No. 2, pp. 166-80.
10
11 Francken, N., Minten, B. and Swinnen, J.F. (2012), "The political economy of
12 relief aid allocation: evidence from Madagascar", *World Development*,
13 Vol. 40 No. 3, pp. 486-500.
14
15 Freeman, P.K. (2004), "Allocation of post-disaster reconstruction financing to
16 housing", *Building Research & Information*, Vol. 32 No. 5, pp. 427-37.
17
18 Gilpin, R. (2016), *The political economy of international relations*, Princeton
19 University Press.
20
21 Government of Bangladesh (2014), "Climate Fiscal Framework", available at
22 [https://info.undp.org/docs/pdc/Documents/BGD/1695%20ClimateChange](https://info.undp.org/docs/pdc/Documents/BGD/1695%20ClimateChange_FullLayout%20290914.pdf)
23 [e_FullLayout%20290914.pdf](https://info.undp.org/docs/pdc/Documents/BGD/1695%20ClimateChange_FullLayout%20290914.pdf) (accessed 25 February 2017).
24
25 Hallegatte, S., Rentschler, J. and Walsh, B. (2018), "Building back better:
26 achieving resilience through stronger, faster, and more inclusive post-
27 disaster reconstruction", in World Bank.
28
29 Hamdan, F. (2015), "Intensive and extensive disaster risk drivers and
30 interactions with recent trends in the global political economy, with special
31 emphasis on rentier states", *International Journal of Disaster Risk*
32 *Reduction*, Vol. 14 pp. 273-89.
33
34 Healy, A. and Malhotra, N. (2009), "Myopic voters and natural disaster policy",
35 *American Political Science Review*, Vol. 103 No. 03, pp. 387-406.
36
37 Helmke, G. and Levitsky, S. (2004), "Informal institutions and comparative
38 politics: A research agenda", *Perspectives on Politics*, Vol. 2 No. 4, pp.
39 725-40.
40
41 Hemingway, R. and Gunawan, O. (2018), "The Natural Hazards Partnership: A
42 public-sector collaboration across the UK for natural hazard disaster risk
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

reduction", *International Journal of Disaster Risk Reduction*, Vol. 27 pp. 499-511.

IPCC (2014), "Climate change 2014: synthesis report. Summary for policymakers ", available at https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf (accessed 15 July 2016).

Islam, M.M. (2014), "The Politics of the Public Food Distribution System in Bangladesh: Regime Survival or Promoting Food Security?", *Journal of Asian and African Studies*, Vol. 50 No. 6, pp. 702-15.

Islam, R., Walkerden, G. and Amati, M. (2017), "Households' experience of local government during recovery from cyclones in coastal Bangladesh: resilience, equity, and corruption", *Natural hazards*, Vol. 85 No. 1, pp. 361-78.

Jha, M.K. (2015), "Liquid disaster and frigid response: Disaster and social exclusion", *International Social Work*, Vol. 58 No. 5, pp. 704-16.

Kato, M. (2010), "Disaster risk reduction under the United Nations Framework convention on Climate Change", *Climate change adaptation and disaster risk reduction: issues and challenges*. Emerald Publication, Bingley, pp. 47-75.

Laffont, J.-J. (2000), *Incentives and political economy*, Oxford University Press.

Mallick, B. (2014), "Cyclone shelters and their locational suitability: an empirical analysis from coastal Bangladesh", *Disasters*, Vol. 38 No. 3, pp. 654-71.

Ministry of Disaster Management and Relief, GOB (2008), "Construction of flood shelter in flood-prone and river-erosion prone areas", in Relief, M.o.D.M.a. (Ed.) Ministry of Disaster Management and Relief

Ministry of Disaster Management and Relief, GOB (2010), "National Plan for Disaster Management 2010-2015", in BG Press, Ministry of Disaster Management and Relief, Bangladesh.

1
2
3
4 Ministry of Disaster Management and Relief, GOB (2012), "Disaster
5 Management Act 2012", in BG Press, Ministry of Disaster Management
6 and Relief, Bangladesh.
7
8

9 Ministry of Disaster Management and Relief, GOB (2015), "National Disaster
10 Management Policy 2015", in BG Press, Ministry of Disaster
11 Management and Relief, Bangladesh.
12
13

14
15 Mirza, M.M.Q. (2002), "Global warming and changes in the probability of
16 occurrence of floods in Bangladesh and implications", *Global*
17 *Environmental Change*, Vol. 12 No. 2, pp. 127-38.
18
19

20
21 Mitchell T, D., Reinhard Mechler, D. and Harris, K. (2012), "Tackling exposure:
22 placing disaster risk management at the heart of national economic and
23 fiscal policy".
24
25

26 Mogues, T. (2015), "Political economy determinants of public spending
27 allocations: A review of theories, and implications for agricultural public
28 investment", *European Journal of Development Research*, Vol. 27 No. 3,
29 pp. 452-73.
30
31
32

33
34 Muñoz, C. and Tate, E. (2016), "Unequal recovery? Federal resource
35 distribution after a Midwest flood disaster", *International journal of*
36 *environmental research and public health*, Vol. 13 No. 5, p. 507.
37
38

39
40 Neumayer, E., Plümper, T. and Barthel, F. (2014), "The political economy of
41 natural disaster damage", *Global Environmental Change*, Vol. 24 pp. 8-
42 19.
43
44

45
46 Noy, C. (2008), "Sampling knowledge: The hermeneutics of snowball sampling
47 in qualitative research", *International Journal of social research*
48 *methodology*, Vol. 11 No. 4, pp. 327-44.
49
50

51
52 Paul, B.K. and Mahmood, S. (2016), "Selected physical parameters as
53 determinants of flood fatalities in Bangladesh, 1972–2013", *Natural*
54 *hazards*, Vol. 83 No. 3, pp. 1703-15.
55
56
57
58
59
60

1
2
3
4 Pelling, M. and Dill, K. (2010), "Disaster politics: tipping points for change in the
5 adaptation of sociopolitical regimes", *Progress in Human Geography*,
6 Vol. 34 No. 1, pp. 21-37.
7
8

9 Planning Commission of Bangladesh, GOB (2012), "Bangladesh Poverty
10 Reduction Strategy Papers", in pp. 47-8.
11
12

13 Prabhakar, S., Srinivasan, A. and Shaw, R. (2009), "Climate change and local
14 level disaster risk reduction planning: need, opportunities and
15 challenges", *Mitigation and adaptation strategies for global change*, Vol.
16 14 No. 1, p. 7.
17
18
19

20 Purdon, M. (2015), "Advancing Comparative Climate Change Politics: Theory
21 and Method", *Global Environmental Politics*.
22
23

24 Rasid, H. and Paul, B.K. (1987), "Flood problems in Bangladesh: Is there an
25 indigenous solution?", *Environmental Management*, Vol. 11 No. 2, pp.
26 155-73.
27
28
29

30 Sawada, Y. and Takasaki, Y. (2017), "Natural disaster, poverty, and
31 development: An introduction", *World Development*, Vol. 94 pp. 2-15.
32
33

34 Schipper, E.L.F. (2009), "Meeting at the crossroads?: Exploring the linkages
35 between climate change adaptation and disaster risk reduction", *Climate
36 and Development*, Vol. 1 No. 1, pp. 16-30.
37
38

39 Scott, Z. and Tarazona, M. (2011), "Study on disaster risk reduction,
40 decentralization and political economy", *Global Assessment report on
41 disaster risk reduction. United Nations*.
42
43
44

45 Serrat, O. (2017), "Political economy analysis for development effectiveness",
46 in *Knowledge Solutions*, Springer, pp. 207-22.
47
48

49 Sovacool, B.K. (2017), "Don't let disaster recovery perpetuate injustice", *Nature*,
50 Vol. 549 No. 7673, pp. 433-.
51
52

53 Sovacool, B.K., Tan-Mullins, M. and Abrahamse, W. (2018), "Bloated bodies
54 and broken bricks: Power, ecology, and inequality in the political
55 economy of natural disaster recovery", *World Development*, Vol. 110 pp.
56 243-55.
57
58
59
60

1
2
3
4 UNISDR (2005), "Hyogo Framework for Action 2005-2015", available at
5 <https://www.unisdr.org/we/coordinate/hfa> (accessed July 09 2016).

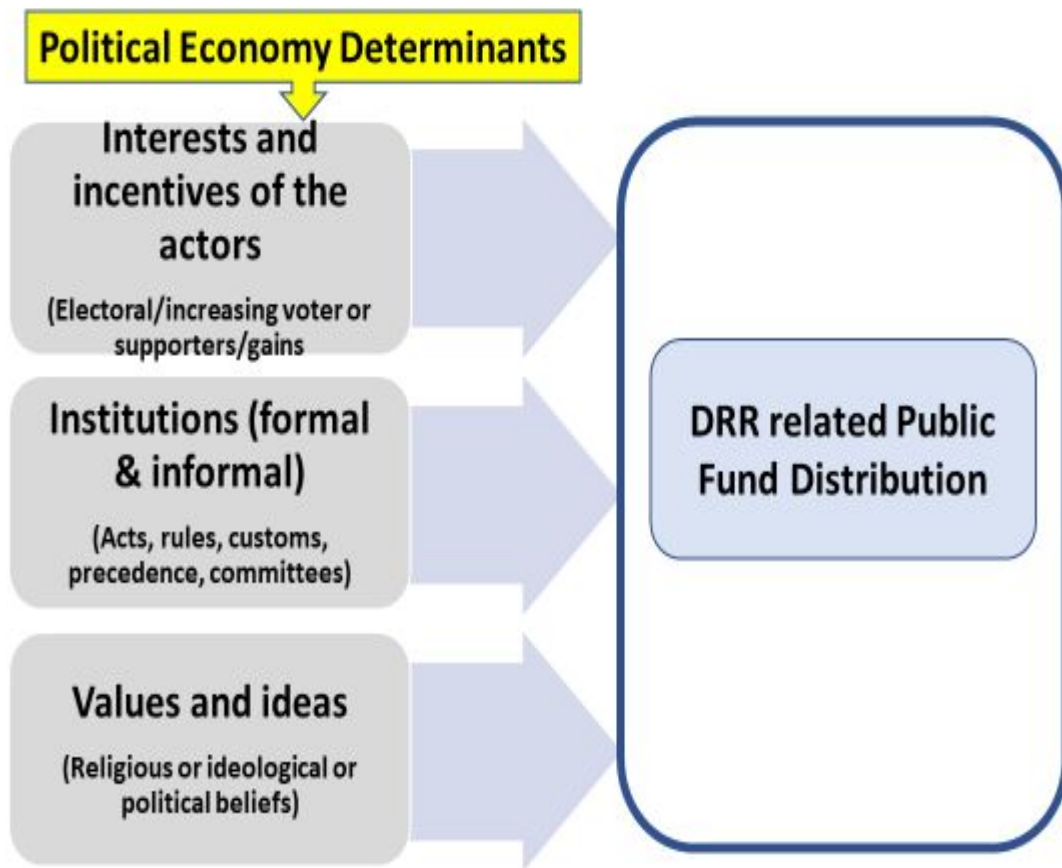
6
7 UNISDR (2015), "From a Reactive to Proactive then People Centered Approach
8 to DRR", available at
9 http://www.unisdr.org/files/49574_hfacelebrationreport7082015verdana.pdf
10 (accessed 03 January 2017).

11
12
13 Van Niekerk, D. (2015), "Disaster risk governance in Africa: A retrospective
14 assessment of progress against the Hyogo Framework for Action (2000-
15 2012)", *Disaster Prevention and Management*, Vol. 24 No. 3, pp. 397-
16 416.

17
18
19 Williams, G. (2011), "Study on disaster risk reduction, decentralization and
20 political economy", *Background Paper for the*.

21
22
23 Xie, W., Rose, A., Li, S., He, J., Li, N. and Ali, T. (2018), "Dynamic economic
24 resilience and economic recovery from disasters: a quantitative
25 assessment", *Risk analysis*, Vol. 38 No. 6, pp. 1306-18.

26
27
28 Yin, R. (2011), "Qualitative Research from Start to Finish, New York & London",
29 in The Guilford Press.



Summarised by authors from (Alam et al., 2011; DFID, 2009b; Kumar Sharma, 2011; Mogues, 2015; Purdon, 2015; B. Sovacool & Linnér, 2015)

Figure 1: Factors that may influence the process of DRR-related public fund distribution (drawn by author based on literature).

Disaster Prevention and Management

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

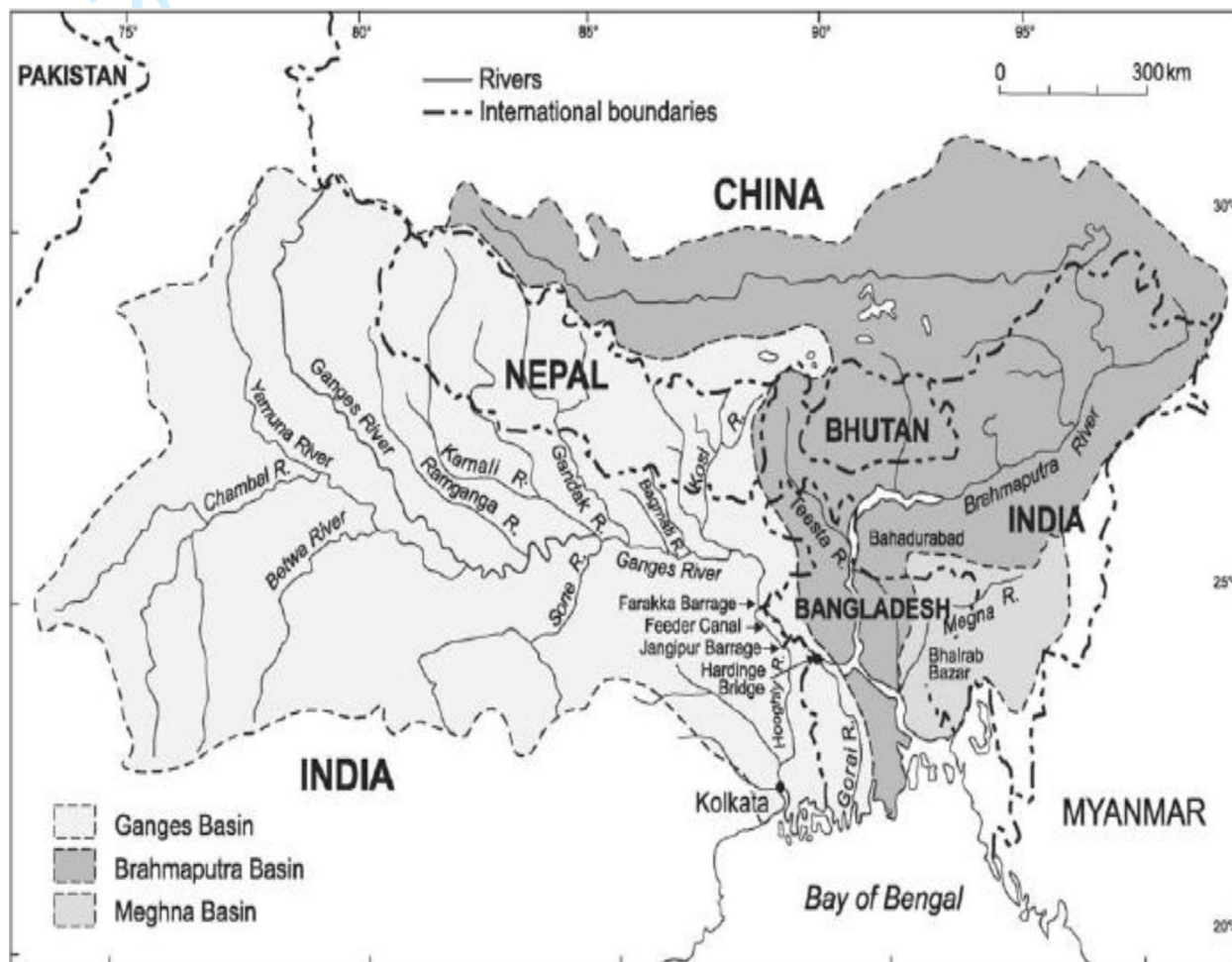


Figure 2: The river systems, and geographic location of Bangladesh (Mirza, 2002)

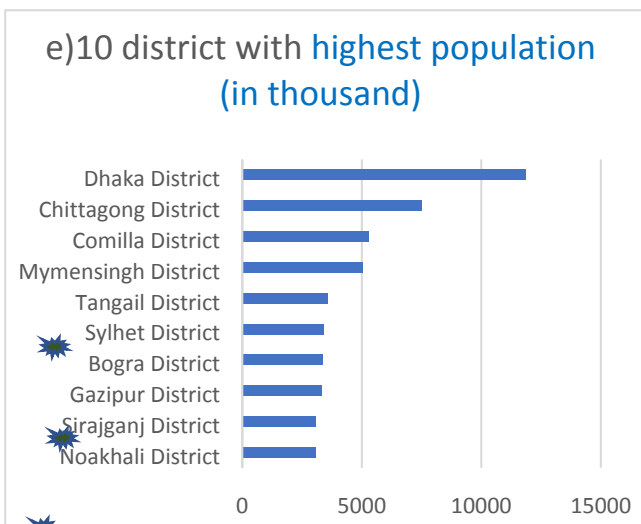
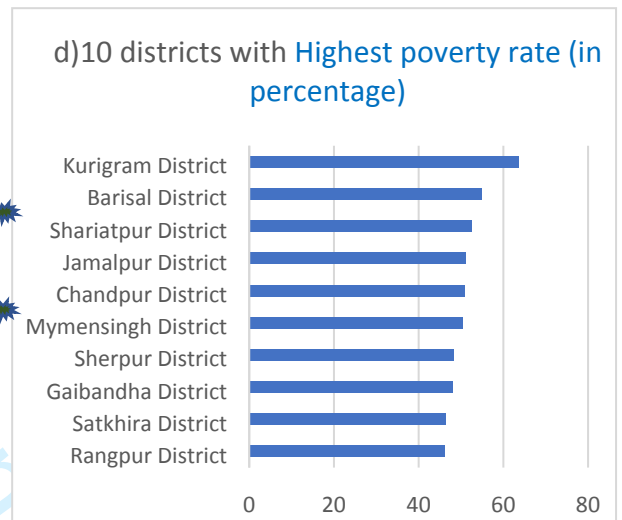
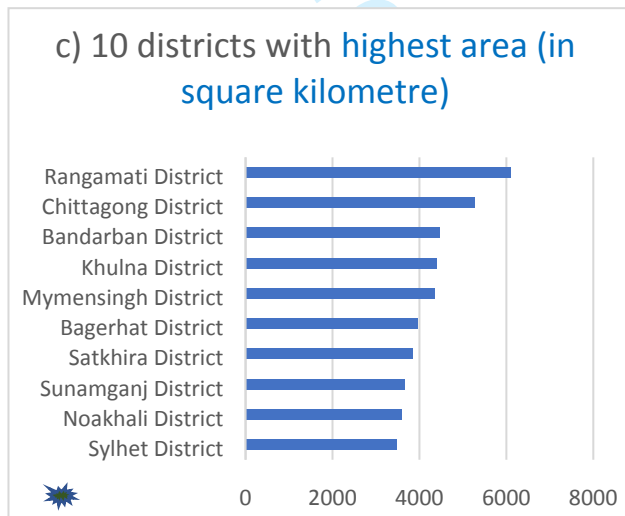
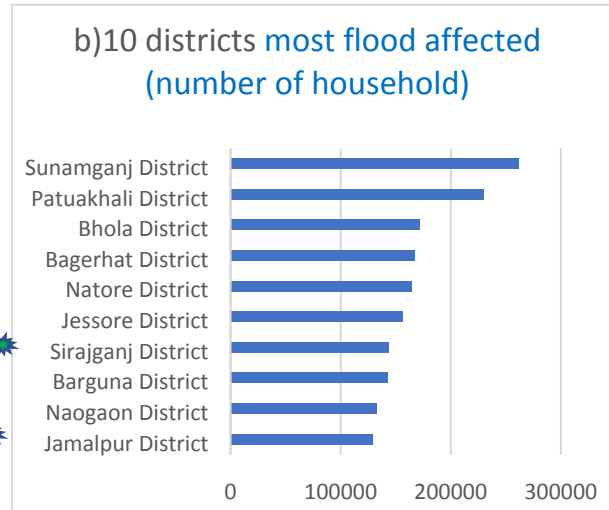
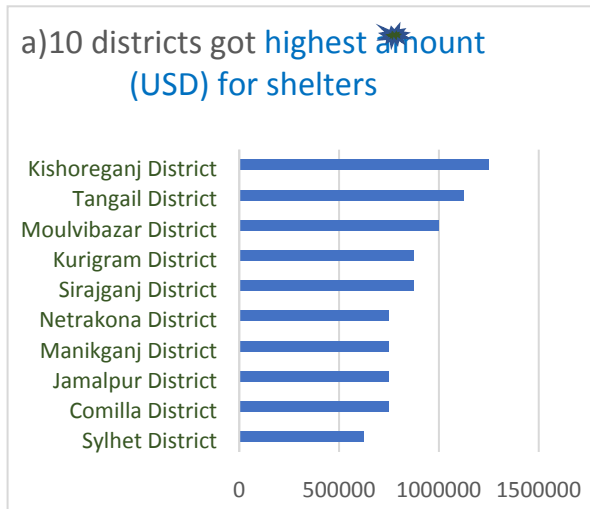


Figure 3: (a) Districts (named in green and highlighted with the star in subsequent sub-plots) received highest number of flood shelters from the project administered by the DDM, compared with districts with (b) highest flood risk, (c) largest area, (d) highest poverty rate, (e) largest

1
2
3 *population (drawn by the author based on the official documents from DDM, and Bangladesh:*
4 *Disaster-Related Statistics 2015).*
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Disaster Prevention and Management

Table 1: Distribution of in-depth interviews (IDIs) participants.

Participants	Ministry (Top-level)	Ministry (mid-level)	Local (district, and subdistrict)	Total
Decision makers, and Government officials	06	08	05	19
Political leaders, and Public Representatives				06
Community leaders				03
International Organisations				04
Academic, and consultant				04
Journalist				02
Total				38

Narsingdi	3									3
Natore						2				2
Nawabganj		5								5
Netrakona				0						0
Nilphamari			3							3
Noakhali				3						3
Pabna	9									9
Panchagarh	7									7
Patuakhali								0		0
Pirojpur				1						1
Rajbari	9									9
Rajshahi	2									2
Rangamati	0									0
Rangpur		2								2
Satkhira					2					2
Shariatpur					0					0
Sherpur	7									7
Sirajganj						2				2
Sunamganj									0	0
Sylhet				0						0
Tangail					3					3
Thakurgaon		6								6
Grand Total	125	29	23	7	50	8	15	0	0	257