

Bone Dry and Flooding Soon

A Regional Water Management Game

Final Report

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A handwritten signature in blue ink, appearing to read 'Paul E. Faeth'. The signature is stylized and somewhat abstract.

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Abstract

CNA Corporation, sponsored by the Skoll Global Threats Fund, executed two instances of a political decision-making game designed to explore information-sharing and cooperation over water on the Indian subcontinent. The game explored how Bangladesh, China, India, and Pakistan manage water resources between the Brahmaputra, Indus, and Ganges rivers. The first instance of the game took place in January 2014 in the Washington, DC area, and was played primarily by American subject matter experts. The second instance of the game was held in June 2014 in Kuala Lumpur, Malaysia, and was played by retired senior officials with policy and military backgrounds, and water experts from all four South Asian countries. This document summarizes the second (regional) instance of the game, identifies strategic insights from the regional instance, and compares the two instances deriving further insights based on that comparison.

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Executive Summary

Background

Water is a natural resource that crosses human-imposed boundaries within and between countries. When it crosses boundaries, upstream and downstream interests can come into conflict over water sharing and water quality.¹ In the past, these challenges have been resolved peacefully through political and treaty processes. However, in regions such as the Indian subcontinent where there are pre-existing reasons for conflict, water issues can increase the intensity of the conflict or promote cooperation. Tensions may also increase if droughts and floods intensify, or with greater precipitation variability due to climate change.

The Skoll Global Threats Fund (SGTF) was interested in two issues: (1) understanding how countries decide to share water information within their wider political and economic considerations, and (2) whether sharing information about water would facilitate cooperation on water management on the Indian subcontinent. In 2013 the SGTF asked CNA Corporation (CNA) to design and execute a game exploring this question. Specifically, the SGTF was interested in understanding the interactions between Bangladesh, China, India, and Pakistan.

Water is one of many issues that produce tensions in the region. China and India are upstream riparian countries that have significant demands for irrigation and power. Pakistan and Bangladesh are downstream countries that are affected by water flows coming out of the other countries. In addition, there are tensions within India, Pakistan, and Bangladesh over water sharing between provinces and regions. Both these internal and external relationships are governed by treaties and laws, some dating back to the colonial period.

¹ Water quality was tracked in the game and was discussed but it did not have a significant effect on outcomes.

Game design

There were two instances of the game; the first (later referred to as the “D.C. instance”) was held in January 2014 at CNA Corporation’s headquarters in the Washington, DC area and involved approximately 20 subject matter experts based in the United States. The second instance (later referred to as the “regional instance”) was held in June 2014 in Kuala Lumpur, Malaysia with 14 Track 2² individuals from each of the countries.

During the game, players were tasked with running their countries and their water systems at a high level of abstraction. They had to establish their national goals and objectives, identify key initiatives, and decide how to fund these objectives and initiatives. For example, the India players had to decide how much water they were going to divert from the Ganges to the Hooghly River. Another example is when players from Bangladesh, India, and Pakistan discussed water conservation measures and whether funding these measures was a high priority. This paper summarizes the regional instance of the game, identifies strategic insights from the regional game, and compares the two instances.

Game results

Game play in the regional instance produced insights on water and its connection to politics, conflict, and cooperation in the region. One of the central conclusions which emerged from the game is that information-sharing does not lead to cooperation. Rather, trust and cooperation are necessary for information-sharing to occur. This contradicts the initial assumption that increasing the amount of information that is shared among these countries will facilitate cooperation between them.

Over the course of the game, it became clear that there was a substantial lack of trust between the country teams that clouded any strategic negotiations and discussions. Water is one such strategic issue where the countries found it difficult to find consensus.

² Track 2 diplomacy is unofficial dialogue and problem-solving activities aimed at building relationships and encouraging new thinking that can inform the official process. Track 2 activities usually involve non-governmental organization leaders, influential academic leaders, and other civil society actors who can interact more freely than high-ranking officials [1].

Below are our key findings in order of importance based on their occurrence and implementation during the regional instance of the game:

- Trust is an essential element in order for countries to consider cooperating both internally as well as externally. Without trust, countries will not be willing to share information.
- In order for countries to act regionally, they may wish to first resolve internal conflicts and competing priorities. A lack of trust and insufficient internal stability tends to distract countries from negotiating externally.
- A country's absence of information on water flows in this region is a political issue, not a technical one. Upstream countries can use water for political gains to accomplish both strategic and tactical objectives, and to influence the actions of downstream countries.
- The impact of water (or lack thereof) on a country's economy, society, and politics could be as significant as a cross-border dispute in that it drives conflict, distrust, and instability in the region. This issue is further exacerbated by the unpredictability of climate effects.
- There are two differing views on water in the region; Bangladesh and Pakistan players saw it as a shared resource, while the China players viewed it as an exclusively Chinese resource. Therefore the China players did not see the need to share information on water. The India team's views were context-dependent based on their water needs and geographic position. In order for countries to share water and water information, these differences need to be acknowledged and discussed. Given the existing legal and treaty frameworks on water sharing, this is an issue for the international community to discuss and act upon if necessary.

In addition, we found both differences and similarities between the two instances of the game, providing a broader understanding of water issues and information-sharing in the region. For example, in the regional instance of the game, the Pakistan players allocated a large amount of internal funds in an attempt to conserve water and survive the impending drought. However, in the D.C. instance, the Pakistan team sought financial assistance from external sources such as the World Bank and China. A topic that arose in both instances of the game was the U.S. pivot or rebalance to the Asia-Pacific region. While this was not a focus of the game, the underlying idea and related actions affected relations between countries.

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A Game of Politics and Water

The time is January 2015. Water resource managers from Bangladesh, China, India, and Pakistan are looking at the results of various computer models—drying is predicted to continue across the subcontinent, and the monsoons might fail for the second year in a row. The region is getting drier, and the water levels in many rivers are dropping. The water managers hope their proposed infrastructure projects will finally be funded, but perhaps it is already too late.

The game was designed to interweave politics and water in order to examine the role of information-sharing in facilitating cooperation on water management between Bangladesh, China, India, and Pakistan. Furthermore, the game sought to understand how countries make decisions about water resources within their broader geopolitical contexts. This section briefly discusses player roles and affiliations in the regional instance of the game, the overall design of the game, and highlights some of the regional game play.

Player roles and affiliations

Bangladesh, India, and Pakistan country teams were composed of a party in power (representing the Prime Minister) and an opposition leader from a region within each South Asian country, along with a Military Leader (who doubled as a Foreign Minister when required) and a Minister of Water. The China team was run by a committee of two individuals. One represented the political/military component in Southern Tibet, and the other filled the role of the water expert in the region.

In the regional instance of the game, players were chosen by the SGTF and CNA analysts based on certain criteria in order to obtain strong and willing participants. This included:

- Previous experience or expertise in a similar role (e.g., senior diplomatic experience for the head of state role, senior military experience for the senior military role, expertise on local politics for the local leader, and water expertise for the water role);

- The individual's reputation in the field (particularly related to the role in which they were being assigned);
- The individual's willingness to participate in a non-traditional Track 2 event; and
- The player's national affiliation and geographical location.

Table 1 displays the country roles played in the game.

Table 1. Regional instance player roles

Role/Country	Bangladesh	India	Pakistan	China
Head of State	✓	✓	✓	
Military leader	✓	✓	✓	
Local opposition leader	✓	✓	✓	
Water Expert	✓	✓	✓	✓
Political representative				✓

Game play was non-attributional. Thus, names of the individuals who participated in the event are not listed. Instead, below is a list of most of the players' associations and/or former positions. Some of the affiliations are omitted due to their identifying nature. In addition to the representatives from the SGTF and the CNA analysts there were two additional observers at the regional instance of the game. Their roles in the game were minor; however we include their affiliations for completeness.

- Former Senior Ambassador from Bangladesh
- Former Senior Ambassador from India
- Former Senior Government Official from Pakistan
- Retired Army General from Bangladesh
- Retired Army General from India
- Retired Army General from Pakistan
- Bangladesh Enterprise Institute
- Bangladesh Institute of Peace and Security Studies
- Center for Environmental and Geographic Information Services
- Centre for Policy Dialogue
- Foreign and Commonwealth Office

- Institute for Defence Studies and Analysis
- Institute of Peace and Conflict Studies
- International Water Management Institute
- S. Rajaratnam School of International Studies
- The World Bank
- Yunnan University

Game design

The game provided players with the opportunity to set their own objectives and goals within the context of possible real-world events—an increasing drought then a flood. Since the game design provided ample opportunities for countries and individuals to interact, there was considerable negotiation, discussion, and interplay between the countries. As mentioned earlier there were two instances of the game. Based on the D.C. instance game results,³ CNA updated game mechanics for the regional instance of the game. The main difference in game design between the two instances was the water management component.⁴

Both instances of game play began in 2015. Players completed five turns, with each turn representing one year; hence, both instances ended in 2019. Players were given game boards (see Figure 1), which were visual displays that portrayed information about their political support; national security and foreign policy issues; and economic and agricultural status. These displays were accompanied by water maps (see Figure 2), which showed the water levels in the current year (white spaces) and projected for the following year (yellow spaces). Both displays were updated each turn. Players from either political party could call for elections if that was possible in the real world; otherwise, elections occurred during the normal election cycles of the respective countries. Elections were won or lost based on a die roll, modified by the current political state of the country and the economy. Elections created the possibility for the players representing the Prime Minister to fall out of power as a result of their decisions, and gave the opposition players a chance to possibly act as the ruling party. Players could do anything in the game that they could do in the real

³ For in-depth analysis on the D.C. instance, please see CNA's paper, *Bone Dry and Flooding Soon: A Regional Water Management Game Interim Report* [2].

⁴ In the D.C. instance players were given pre-printed sheets with water flows levels. In order to allow for more dynamic play, a dynamic water flow map was created for each country in the regional instance of the game.

world, though most of these real-world activities were abstracted and condensed to allow for game play.

Figure 1. Sample game board

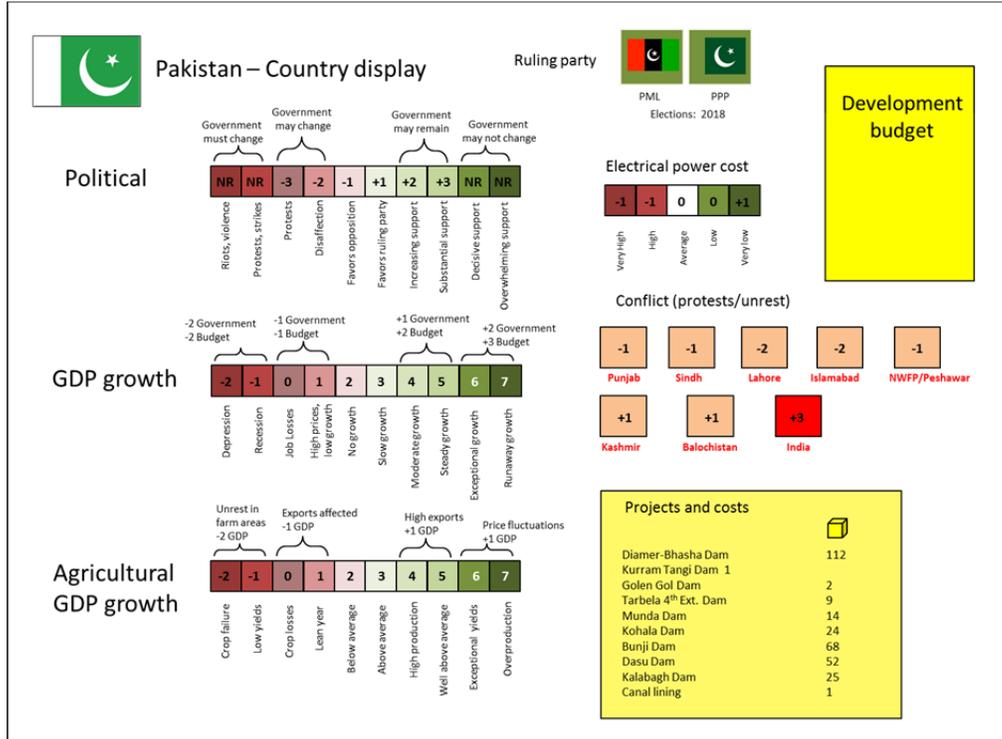
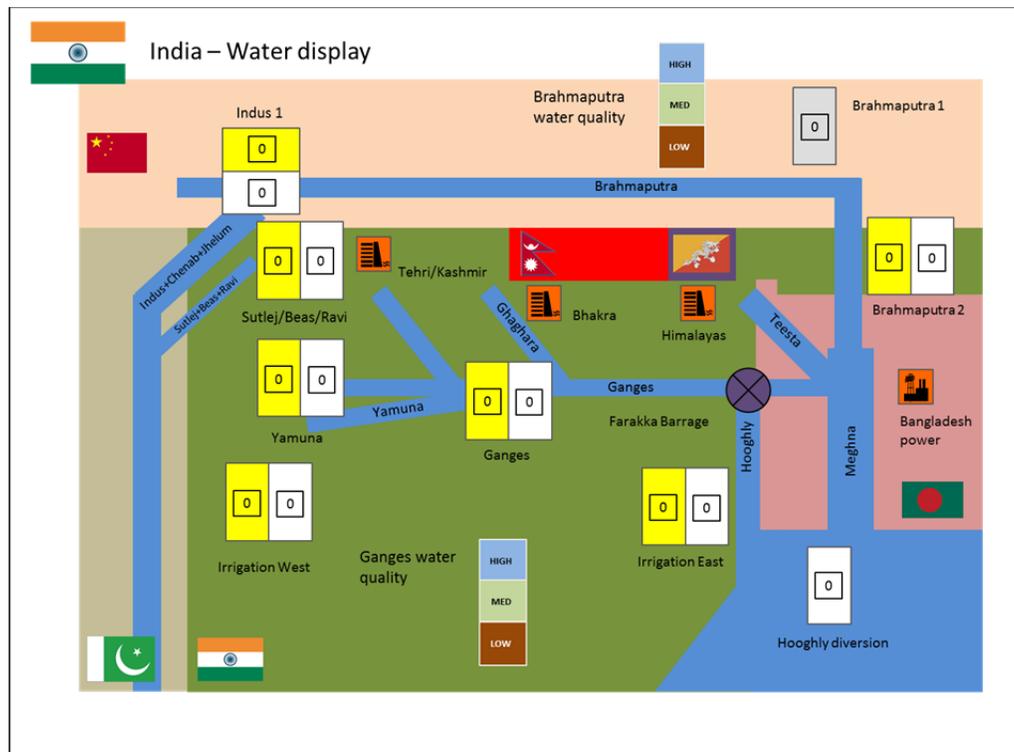


Figure 2. Sample water map



Over the course of these 5 years (in game time), there were 2 years of intense drought, followed by 2 years of flooding. The drought played havoc with the agricultural sectors of the countries' economies, and the flooding had the potential to create a slow onset disaster requiring national or international response.

In the first year of drought, all the countries established their baseline positions with the expectation (based on their future water model predictions) that the drought would worsen in the coming years. These positions remained remarkably consistent despite negotiations and domestic changes. In contrast, flooding was more easily managed since it had fewer repercussions on the economy and was fundamentally a national and regional disaster-response operation.

As the drought intensified, the baseline positions for the countries played out in negotiations, conferences, and internal discussions. For example, the Pakistan team was united behind a strong plan that mitigated the drought and the subsequent flooding but that also placed the Prime Minister player at great risk in terms of domestic politics, because the player took a decisive and controversial position. As a result, these actions mitigated the effect of the drought on the Pakistan team. By contrast, the India and Bangladesh teams suffered through the drought and the

flooding. The India team largely pursued a position of bilateral cooperation with all its neighbors and managed its internal disputes. The Bangladesh team tried to pursue a multilateral position; however, this was unsuccessful. This was because it was at the mercy of the upstream countries, and its own contentious political system prevented comprehensive water management.

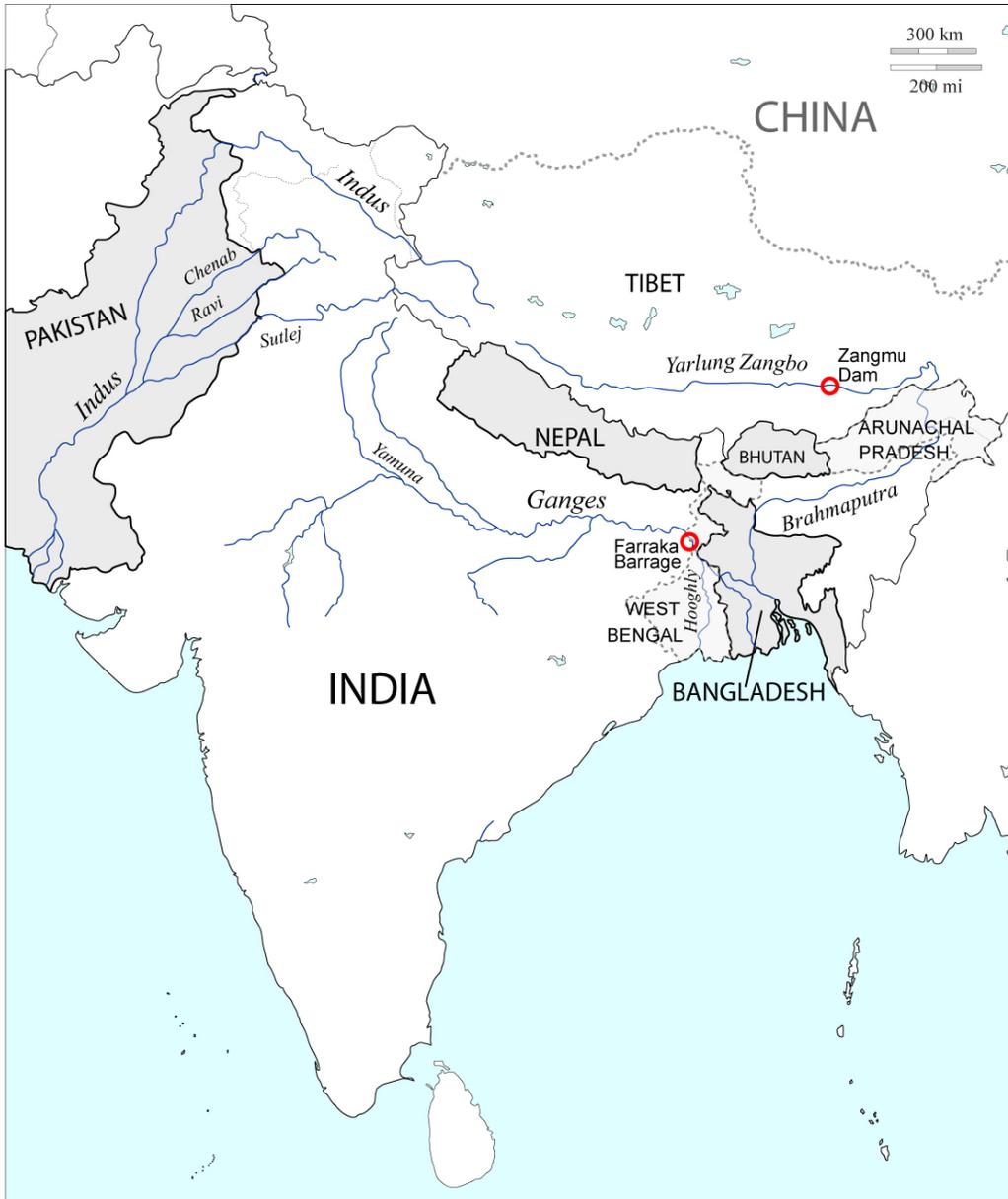
Throughout, the game controller injected pre-planned events, such as terrorism, political scandals, and disease outbreaks, to which the players had to respond. Sometimes, players' actions coincidentally overlapped with random events. For example, Bangladesh's Prime Minister player threatened that increasing poverty and displacement would lead to terrorism, and terrorist acts occurred in the next year.⁵

Regional game play

In the following subsections, we describe the perspectives and behaviors of the Bangladesh, China, India, and Pakistan teams in the regional instance of the game. Each country section is organized by how each country's geographical position and views on water defined the actions that took place during the game followed by a brief discussion on how politics either internally or externally affected each country's approach to the game. A map of the region and major rivers is provided as a reference for the reader in Figure 3.

⁵ Players were aware that the terrorist attacks were not the direct actions of the Bangladesh team. However, within the game the Bangladesh player was still blamed for the threats and terrorist attacks.

Figure 3. Map of region^a



^a. Note that China refers to the Brahmaputra River as Yarlung Zangbo.

Bangladesh

“Water security is linked to food security. While we have doubled energy production, we need to double that amount again in the next five years. With this in mind, the Bangladesh government is looking at how to utilize and maximize benefits from available waters in the region.” - Bangladesh Awami Prime Minister player,⁶ 2015

“We have been disappointed by the misplaced trust we have placed on our neighbors.” - Bangladesh Nationalist Party (BNP) opposition leader player,⁷ 2015

Geographically, Bangladesh is a downstream country and, thus, lacks sway with its upstream neighbors (China and India) in bilateral negotiations. From the outset of the game, Bangladesh players sought a multilateral approach to solve water-sharing problems and voice its concerns. The Bangladesh players requested multilateral talks with the China and India teams, but both teams, for unrelated reasons, resisted multilateral approaches toward water management.

Beginning in 2015 and continuing throughout the game, the India players, as an upper riparian country, saw no advantage in multilateral discussions, because they could wield more power over Bangladesh bilaterally. China viewed water from a fundamentally different perspective than the Bangladesh players. The Bangladesh team considered water an essential resource that needed to be shared regionally. In contrast, the China team considered water to be an indigenous resource, on which downstream countries had no claim (similar to minerals and hydropower). The only instances in which the China team discussed water sharing with the Bangladesh players was when they could exact a quid pro quo, such as asking them to cancel the Status of Forces Agreement (SOFA) with the U.S. forces,⁸ or asking for a financial fee or mineral rights exchange.

Later in the game the Bangladesh team employed an alternate tactic by trying to engage the international community⁹ to shame or disapprove of the China team's

⁶ In 2015 the Bangladesh Prime Minister player was head of the Awami League, the majority party in Bangladesh.

⁷ In 2015 the Bangladesh opposition leader represented the interests of the Bangladesh Nationalist Party, the minority party in Bangladesh.

⁸ One of the pre-planned injects in the game was a SOFA agreement between Bangladesh and the United States.

⁹ In the game the international community included the United Nations, the World Bank, and the United States. These roles were played by the two additional observers and the game controller.

actions. Their efforts had very little effect, because the China players were mainly concerned with issues like power production, water diversion, and borders clashes.

In addition to the water issues the Bangladesh players faced externally, they also had to deal with internal politics. In 2015, the Awami League was in power, but it gained no ground with either the India or China teams. The BNP opposition player used their failures to bolster its own public support and take over as the majority party in 2016. But the BNP player also failed to gain traction with its upstream neighbors. No matter which political party was in power in Bangladesh, both faced the same obstacles to sharing water and cooperating regionally.

While the BNP player was just as unsuccessful as the Awami League player in engaging the India and China teams, the BNP player turned to rhetoric to condemn the “haves” versus the “have nots.” The players representing the new government sought leverage in areas of increasing importance to India:

- *Humanitarianism.* They condemned the lack of cooperation on water and pointed to the costs of not sharing water and data on the publics in the region, and particularly on the poorest countries (i.e., Bangladesh).
- *Refugees.* The players representing the new government suggested that a lack of cooperation on both the water and economic fronts might raise the number of refugees fleeing economic conditions in Bangladesh. This, along with the specter of terrorist acts committed by refugees, was seen as thinly veiled threats and was not received well by the India players or other teams.
- *Terrorism.* The Bangladesh players threatened that the lack of resources to enforce security in various regions could give rise to Islamic terrorism or Indian Maoist insurgents seeking refuge in Bangladesh territory. This prompted the biggest reaction from the India team, especially after terrorist attacks actually occurred (2017 in game time). Ultimately, the attacks were blamed on the Bangladesh players, which further isolated the country from the region as a whole and prevented it from advancing its agendas.

The Bangladesh players’ strategy was in clear contrast to the Pakistan players’ strategy. In Pakistan, the ruling and opposition party players were united, which was not the case for the Bangladesh players. In Bangladesh, a raucous inter-party rivalry between the players and domestic political agendas dominated the conversation, leaving no time to develop a clear position on either water or international issues. Throughout the game, the two political parties were always close to toppling each other’s electoral majority, so the players in power were focused on maintaining their power rather than implementing concrete water-management programs. This seriously hampered the Bangladesh team’s ability to make progress on either domestic or international issues.

“Since we are proposing a joint ecological monitoring system, we need compensation.” - China player, 2017

“You will get the benefit, we will be the victim.” - Bangladesh BNP Prime Minister player response, 2017

China

“It is not for the upper riparian states to determine the amount [of water] that should be used.” - India player to China players, 2015

“Let’s talk about our border issue [in the Arunachal Pradesh region]...” - China player counter proposal, 2015

The China players made decisions about water as if it was their exclusive resource, which they could keep or share as they wished. This differed from the views of the Bangladesh and Pakistan teams, who saw water as a common resource equally shared between all riparian countries. The India team’s views were context-dependent based on their water needs and geographic position. The China team used the drought and access to water as leverage to work towards its regional objectives, including:

- Developing Tibet through hydropower and irrigation;
- Resolving border disputes and mineral rights issues with the India players; and
- Incentivizing cooperation with India players on issues such as food prices.

As the game continued and conditions became drier, the China team maintained its possessive stance on water. They avoided direct confrontations but were willing to use water to barter with countries for resources like power and minerals. Their interactions were based on monetary and business terms rather than brokering or mediating multilateral disputes. Negotiations between the China players and other countries were common. This demonstrated that the China team was unwilling to share water without appropriate compensation.

During the game (in 2016) the China players decided to speed up dam construction in this region to mitigate the drought’s effect. However, they deliberately hid this increase in dam construction from the other players, blaming any resulting water scarcity on the climate. The India team was naturally skeptical of the low water levels and wanted additional data, including visits to the sites, to verify China’s claims. This was a contentious issue between the China and India players, precipitated by the fact that the China team saw water as a national asset, whereas the India team treated

water like a shared resource as the downstream country to China. This disagreement continued throughout the game, with little resolution or progress.

By the end of 2016, the China players began filling the Zangmu dam, which dropped Brahmaputra River flows significantly. Publicly, the China players did not admit to any new diversions or infrastructure, even when they were accused of siphoning water by the Bangladesh team. Not only did the China team deny these allegations, but it also stated that the Bangladesh team owed them an ecological management fee in exchange for providing these downstream flows.

By year four (2018 in game time), the drought broke, and the region was flooded with heavy rains. The China players continued working toward larger issues of territorial disputes and regional cooperation, including security cooperation. They determined that investments in dams and canals required significant financial support, so downstream countries should help compensate the China team for their efforts.

At the same time, the China players were concerned about one particular external political issue. Specifically they were concerned about the United States' influence in Asia. One tactic employed by the China team was to use cooperative strategies. For example, the China players believed that their internal efforts to improve water flows (through dams and diversions) and to produce hydropower would better stabilize the water flows and power downstream, thus benefiting their neighbors. As an alternative the China players were also willing to employ less cooperative strategies if necessary. For example, the China players withdrew from negotiations with the Bangladesh players when Bangladesh started SOFA negotiations with the United States.

“Our position is not just to discuss water issues; our position is to discuss other issues as well.” - China player to the India team, 2020

India

“Let’s delay signing the Teesta River Agreement [with the Bangladesh team] until 2017 to improve our re-election chances against the Congress party.” - India’s Bharatiya Janata Party¹⁰ player, 2015

¹⁰ In 2015 the India Prime Minister player was head of the Bharatiya Janata Party, the majority party in India.

The India players were in a unique position as they are both an upstream country (in relation to Bangladesh and Pakistan) and a downstream country (in relation to China). The India team's view on water and security was different from that of the China players; they saw water as both an internal and external political issue. Their position on water was consistent throughout the turns of the drought. Players sought bilateral negotiations with downstream countries to benefit its water access, like building a coalition with the Bangladesh players to pressure the China team to share water information. The India players also sought information directly from the China team to confirm its suspicions about China's water diversions.

The Bharatiya Janata Party (BJP) players, led by the player representing the India Prime Minister, had three priorities:

1. Appease West Bengal;
2. Mitigate internal political turmoil; and
3. Manage external neighbors.

During the game, West Bengal was a flashpoint because of its vulnerability to drought and its dependence on China sharing water flows over the border. When it feuded with China over the border, it potentially compromised access to the Brahmaputra River. To appease West Bengal and the player in the role of opposition leader,¹¹ the Prime Minister player proposed a financial assistance package with improved border infrastructure. The player argued that a financial assistance package would provide more long-term assistance than a water package¹² because West Bengal gains resiliency through economic growth.

Internally, the BJP players hoped to keep water from becoming too political. Other water shortage concerns were deferred to India's dispute resolution authority. To mitigate the effects of the drought, the BJP players also invested \$1.3 billion in run-of-the-river projects,¹³ specifically canal lining; and improvements to the Farraka Barrage,¹⁴ water quality, and irrigation canals.

¹¹ The India opposition leader represents the interests of the Indian states and the interests of the Indian National Congress Party, the minority party in India (post-May 2014).

¹² A water package would have likely included lining canals, improving dam construction, and other water conservation measures.

¹³ Run-of-the-river projects typically do not require a large impoundment of water.

¹⁴ The Farakka Barrage (shown on the map in Figure 1) is the primary diversion of the Ganges River prior to its entering Bangladesh. The Barrage diverts water into the Hooghly River in order to prevent flooding, and provide water to the Calcutta region.

Externally, the India players wanted to improve their water access and ensure regional stability. The India team tried to use Bangladesh to achieve its water goals¹⁵ and frequently refused to consider the Bangladesh team's concerns or demands since it was a lower riparian country. In one occurrence, the Prime Minister player refused to discuss the terms of the draft Teesta River Water-Sharing Agreement¹⁶ because of internal turmoil, but, in reality, the player was waiting to sign the agreement to gain goodwill for the upcoming 2019 election. Another example was when the Bangladesh players asked for transparency on India's river-linking projects because they might affect downstream water flows. The India players rejected their request, claiming that the projects were domestic concerns and did not warrant Bangladesh's involvement.

When the India players did seek the Bangladesh players' cooperation, it was to pressure the China players as a united front to achieve India's ends (namely, the India players wanted data on real-time water flows, projects, storage, and snowfall, along with greater transparency on dams and storage projects). When this strategy eventually fell through, the India team directly requested the China players to permit official visits to Chinese rivers and dam projects, as well as provide the data. The India team hoped to use the official visits or the data to reveal any cheating on the China players' part by comparing the visits or data against their internal models and data. The China players recognized the India players' intent and refused both requests.

The India player's interactions with the Pakistan team largely focused on regional stability, particularly terrorism. The game included sporadic terrorist events that occurred throughout. In the game, most of the terrorists were based in or originated from Pakistan, while the victims were primarily in India or Bangladesh. This created significant conflict between India and Pakistan throughout the game.

By 2017, negotiations between the two countries' players became so heated that the game controller had to intervene and modify future injects in order to partially defuse the situation. Despite the Pakistan players' attempts to limit and manage terrorism in its country, the India players continued to blame Pakistan for any terrorist attacks against India. The issue of terrorism overrode any water or other policy areas associated with the Pakistan team, and required considerable effort on the part of everyone involved to mitigate a potentially escalatory situation.

¹⁵ One example of this was when the India players attempted to use Bangladesh to pressure the China players into sharing information on their dam construction.

¹⁶ India and Bangladesh share approximately 57 transboundary rivers, but only have a water sharing agreement for one (the Ganges River). The Teesta River Water Sharing Agreement, if signed, would be an agreement concerning water in the Teesta River between India and Bangladesh.

"We are cracking down on terrorism by shutting down the Afghan-Pakistan border and closing off traffic between Afghanistan and Pakistan." - Pakistan Prime Minister player, 2016

"That will not be enough; you continue to harbor and encourage terrorists. They come from your country, you are responsible." - India Prime Minister player, 2016

Pakistan

*"Things done in the past have not worked, and, therefore, change is necessary."
- Pakistan Prime Minister player, 2015*

In the first year of the game (2015), the Pakistan Prime Minister player decided to confront the drought head-on, without financial support or assistance from international organizations or other nations. This decision characterized the player's political and economic strategy for the rest of the game, which had the effect of mitigating the drought and flood based on the game controller's adjudication.

According to the Prime Minister player, the previous leadership failed to prioritize and execute infrastructure projects, which led to Pakistan's current problems. To fix these issues, this player froze all development funds. Thus, all future investments in ports, highways, and other infrastructure projects were placed on hold for three to five years, and the funds were redirected to water-conservation projects. The desire to use internal funds rather than multilateral funding from the United States, the World Bank, and additional non-governmental organizations (NGOs) stemmed from a desire to avoid constraints placed on the Pakistan players by lenders. The Prime Minister player hoped that by diverting these funds, Pakistan would be able to prevent India players from gaining the upper hand in terms of entitlement of water and, thus, to force India to share more information on water in a timely manner.

When the freezing and redirection of funds was initially suggested during the game there was push back from the other players. However, the Pakistan players explained that actions similar to this large redirection of funds had been done by previous Pakistan leadership, though not at such drastic levels. The game controller decided that the action was possible and reasonable though lack of investment in other infrastructure would eventually catch up with Pakistan reducing overall GDP growth.

To appease the player representing the opposition leader¹⁷ and gain public support from the Sindh province (a politically influential region), the Prime Minister player offered additional funding to the Sindh province for water-conservation measures. In exchange, the Pakistan People's Party player supported the Prime Minister player's decision to freeze development funds. Once these decisions were made, the Pakistan team was set on a clear course for water management, economic development, and containment of the effects of the drought.

Politically, the Pakistan players looked internally to solve their problems and avoided bilateral and multilateral relationships. In the short term, their efforts limited growth and development in other sectors, but it ultimately mitigated the drought and led to long-term gains economically and in agriculture as adjudicated by the game controller.

However, what the Prime Minister player could not contain were the actions of independent terrorist organizations operating out of Pakistan (the game controller managed those organizations). Terrorist attacks, while small and limited, occurred almost every year, eventually causing a significant rift between the Pakistan and India teams. The Pakistan team supplied accurate water data to the India team and tried to prevent terrorists from entering the country, but the India players were still outraged when terrorist attacks occurred. The only thing that seemed to repair the rift was sharing intelligence and conducting joint operations, which occurred late in the game and only in a limited fashion.

"Terrorism is a solvable problem, but water issues are not as easily solved." - Pakistan opposition player, 2016

"Joint [terrorism] investigations have not worked in the past and it is your [Pakistan's] responsibility to dismantle terrorists within Pakistan that want to attack India." - India Prime Minister player, 2017

Regional impacts of flooding

Throughout the previous country narratives, we did not discuss the years of flooding (2018 - 2019) much because the rapid onset of flooding did not dramatically change the country team's policies or players' actions. By the year 2018, the drought gave way to rising water levels, which ameliorated some of the water-quality issues from previous years; water quality improved across all three major systems (the Ganges, Brahmaputra, and the Indus river basins).

¹⁷ The Pakistan opposition leader represents the interests of the Pakistan provinces and the interests of the Pakistan People's Party, the minority party in Pakistan.

Flooding in Pakistan was largely controlled by the tremendous investment the team had made in dam construction in 2015. In fact, the dam was completed just in time for the ensuing rains. This dramatically limited the downstream runoff in the Indus river system and significantly decreased the effects of the flooding in Pakistan during the game.

Flooding took the biggest toll on the economy, but, generally, it was treated as a standard emergency response operation.

Observations

In this section, we focus on the large strategic issues that came up in the regional instance of the game.¹⁸ These range from issues of trust (which both the players and the game controller saw as the fundamental issue in the game) to development and planning. All of these are affected by water, drought, and flooding, but they are not dominated by water issues. Instead, water modifies the dialogue, colors decisions, and subtly changes the context of those decisions. This can be beneficial (e.g., water opens up dialogue to greater cooperation) or detrimental (e.g., water becomes the focus of contention and exacerbates other, often long-standing, issues).

Trust and cooperation

South Asia's political history spans multiple centuries and the countries in the region suffer from disruptions, suspicion, and blame. Developing trust between countries in this region is not easy or probable, and conversations and actions during the game reinforced this idea. Players argued over border disputes and terrorist actions, and accused upper riparian regions of withholding information on water flow levels. For example, during the game, internal discussions among the Pakistan players revealed concern over the intentions and potential actions the India players could take. Pakistan players stated that the India players could not be trusted and reached out to China to try and ensure that the India players were not withdrawing more than their fair share of water.¹⁹

Such actions and attitudes make it difficult to achieve cooperation on any policy issue. During the game, when the country teams attempted water sharing negotiations, they were immediately sidetracked by other policy issues, primarily terrorism. For example, when the India players met to discuss water sharing with the Pakistan players, the conversation quickly devolved into finger-pointing over a recent terrorist attempt to bomb Chinese dams on the Brahmaputra River. Allegedly, the

¹⁸ For a brief recap of the conclusions on the D.C. instance, see Appendix A: Conclusions from the D.C. Instance of the Game. For an in-depth analysis on the D.C. instance, please see CNA's paper, *Bone Dry and Flooding Soon; A Regional Water Management Game Interim Report* [2].

¹⁹ Pakistan players requested that China either place political pressure on the India players or use technical means to provide the Pakistan players with information on water flows.

terrorists were trained in Pakistan, and the India team blamed Pakistan players for failing to crack down on terrorism. This distrust was apparent in both instances of the game.

In order to cooperate on water, it seems that these countries need to overcome their mutual distrust. A potential first step in this process might be achieving internal stability, as instability distracts political leaders from being able to focus on external relations and coalition building. For the most part, each country suffered from some kind of internal instability. For example, the player representing India's provincial leader frequently called for strikes to oppose the Prime Minister player's policies. Bangladesh suffered from poor economic growth in the first years of the game, which eventually led to the downfall of the Awami League. To make matters worse, these political leaders often leveraged nationalist attitudes and blamed their neighbors to distract the public from its internal problems.

To some degree, countries could initially concentrate on domestic policy issues before seeking regional cooperation. The Pakistan team recognized that internal stability was the first priority, and all regional concerns would have to wait. The Prime Minister player froze all of Pakistan's development funds and diverted 75 percent of these funds to dam construction and water-conservation efforts. Adjudication by the game controller was that this decision would lead to economic growth, greater public support, and increased resiliency to the drought and flooding situations throughout the game, but would ultimately begin to hurt GDP in later years due to underfunded infrastructure. Once the Pakistan players achieved their internal goals, they then sought external cooperation, like the joint groundwater commission²⁰ with the India team to improve water-collection methods and water-sharing opportunities.

The game demonstrated that distrust limits cooperation on a range of issues in South Asia, including water. More often than not, the country teams prioritized their political agendas over cooperation, which further hindered any progress on sharing water information. In order for information-sharing to occur effectively, the game play suggests that countries must first trust each other.

The absence of trust is exacerbated by upstream countries' priorities compared to the downstream countries' priorities. Generally, the upstream countries were unwilling to share water information and regularly refused to provide information. This suggests that there are specific topics upstream countries are not ready to negotiate with downstream countries. The areas where they are willing to negotiate

²⁰ During the game the India and Pakistan players decided to form a joint groundwater commission to examine water quality and malnutrition related to groundwater. This was supposed to be a research project conducted by both India and Pakistan representatives.

could be used as a basis for cooperation. Cooperation needs to come first, then discussions specific to water and information-sharing.

Water and politics

During the game the country teams managed water in two ways: water sharing and water information. Water sharing is concerned with access to water resources. It is inherently political because it is trans-boundary and crucial to the survival and livelihoods of millions of people. Water information is a technical issue that describes river flows; groundwater and surface water levels; evaporation, transpiration, and precipitation rates; and glacial melting.

During game play, the India and Pakistan teams demonstrated their willingness to establish technical working groups to improve data-collection methods. Specifically in the regional instance, players expressed the desire to conduct a joint research project to understand groundwater as it relates to water quality and malnutrition. But these efforts were ultimately superficial. Externally, India and Pakistan players stated that they hoped their joint efforts would lead to additional information-sharing; however, internally, both countries stated that they had no intention of sharing additional water information with their counterpart. Thus, despite declarations to share water information, the country teams did not actually share any information related to water or any water resources.

The China players lied to the Bangladesh players about their activities on the Brahmaputra River because the China players treated water resources as an internal issue that did not warrant regional approval. During the game, the China players withheld a large amount of information on water flows because they decided to fill their dams and divert water. Externally, the China players claimed that these dams were being used to mitigate precipitation variability; but in reality, these dams were actually being used for power production.

When the drought began and the China players were filling the Zangmu dam at an increasing rate, flow levels into Bangladesh dropped significantly. The China players offered to assist the Bangladesh players by giving them additional water, but at a cost. The China players claimed that dams are expensive to build, and since they were built to stave off declining water flows, it was only fair that Bangladesh pay for the services China was providing. As an upper riparian country, the China players used water to increase their influence in the region, and there was nothing that the lower riparian countries could do to counteract their actions, other than appeal to the international community or make threats that unfortunate consequences would occur. These threats, when made by the Bangladesh Prime Minister player, had the opposite intended effect and only increased Bangladesh's marginalization and isolation, given the relative power imbalance between the countries. In a real-world

event, such threats could also have the effect of lessening international support for a moral position on water, something that occurred in the game as other countries began verbally turning on Bangladesh.

Regional balance

The game reinforced the sensitivity of the regional balance of power to the development of relationships between countries in and outside the region. China and the United States are major influences on that balance. Throughout the regional instance, the China players expressed concern over the relationship between the United States and the other countries in the region. Players noted that in order for China to pursue its interests with India and the silk road plan²¹ with Russia and Central Asia, it needs the cooperation of India. During the game, conversations between the India and China players did not prove fruitful. As the China players were increasing dam construction and filling their newly finished dams at a rapid rate, a large portion of the flow in the Brahmaputra River became associated with this task. Thus, drastic decreases in flows exacerbated the drought. The China players were upset at the India players' unwillingness to believe China was not building dams and filling them with water, and the India players' insistence on visiting the sites to confirm these statements. There was concern over the India players' possible reaction to being denied access to the sites. The China team did not want the India players to reach out to the United States for assistance.

Bilateral and multilateral discussions

During the game the China and India country teams were unwilling to engage in multilateral conversations when their interests were best served bilaterally. Bilateralism dominated all negotiations between Bangladesh, China, and India players. The India players were not interested in engaging in multilateral conversations with the China and Bangladesh teams. They hoped to use a bilateral partnership with the Bangladesh team to pressure the China players into sharing more information. There was no incentive to work multilaterally, as it would not accomplish the India players' objective of obtaining water flow information. The Bangladesh players sought multilateralism, but their efforts were ignored by both the

²¹ At an October 3, 2013 speech to the Indonesian Parliament, Chinese President Xi Jinping proposed what has been called the "maritime silk road" initiative, which includes expanded trade, enhanced funding for maritime cooperation, and improved infrastructure connectivity between China and the Association of Southeast Asian Nations (ASEAN) countries [3-4].

India and China players unless they agreed to pay or trade for water resources or water information.

Comparisons between the Instances of Game Play

The regional instance of the game permitted us to expand upon the insights and observations found in the D.C. instance [2].²² This section highlights some of these differences and similarities.

The comparison of the two instances not only illustrates where there was convergence and divergence in views among players facing essentially the same problem set, but it also gives us an ability to assess the differences between having primarily U.S. players play the role of foreign leaders, versus actual foreign leaders playing those roles.

Key differences

One difference between the two instances was the way in which some of the teams approached the game. In the D.C. instance of the game, the India players were misleading. For example, some of their actions included a cyber-attack on the Chinese water system; withholding water from both Pakistan and Bangladesh; and signing the Teesta Agreement with Bangladesh, then immediately taking control of the Brahmaputra and ignoring the conditions of the agreement.

These complex technical tricks, deception, and the use of force are often seen in games where U.S. players attempt to manage a political, social, economic, and military environment. Based on our observations we speculate that the findings from the D.C. instance may be culturally biased by the U.S. players, where the role of technology, tricks, and deception is seen as an important way to create a clear “win/lose” situation in a game and avoid negotiations, organizational management, and ambiguity. In reality, managing these types of situations is far more difficult and nuanced than the U.S. cultural bias toward technology would accommodate. This characteristic/bias may have colored play in the D.C. instance of the game.

²² For a brief recap of the conclusions on the D.C. instance, see Appendix A: Conclusions from the D.C. Instance of the Game.

In comparison the regional India participants approached the game differently. For example, in the regional instance, the India players did not take any drastic actions against the other countries involved; instead, they were manipulative. Specifically, the India players refused to sign the Teesta Agreement with the Bangladesh players in order to further their own political gains. The differences in the manipulateness of the players are likely attributable to the caliber of players we had in the regional instance, as well as the possible cultural bias by U.S. players described previously. India is often seen by its neighbors as willing to use its position as a regional power to manage and manipulate situations to its advantage as they are the upstream country and therefore hold the upper hand over Bangladesh in terms of water.

Differences were also apparent in the way in which the China players approached the game in both instances. During the D.C. instance, the China players were cooperative and willing to share information. The players went as far as stating that they were placing their water flow information with a third-party institution (the International Centre for Integrated Mountain Development in Kathmandu, Nepal), where others could have access to it. None of the other country players believed them and, therefore, did not use the information. In the regional instance of the game, the China players took a different approach. Their actions were deceptive and misleading. The players told the other participants that they were not filling their hydropower dams; when, in reality, they were cutting off water in the Brahmaputra River in order to fill the dams quickly. In addition, during the regional instance, the China team played an aggressive economic and political game, as opposed to the D.C. instance where they engaged in military exercises and supported Pakistan and Bangladesh financially.

The Pakistan players decided to take a different approach in the regional instance from the one seen in the D.C. instance. During the first instance of the game, Pakistan continually reached out to the India players, the China players, the U.S. player, the World Bank player, and other non-governmental organizations players for assistance with the drought. The Pakistan players tried offering various incentives to India players to entice them to cooperate and share information. Unfortunately for the Pakistan players, the India players had no interest in sharing information with them. In addition, outside of the assistance from the China players, they received little funding. By contrast, in the regional instance of the game, the Pakistan players decided that they did not want to ask others for assistance, as it would limit the decisions they could make. Instead, the Pakistan players diverted internal funds to build dams and implement water conservation measures. The regional players did not want to rely on other organizations and countries to accomplish their goals and objectives, especially related to water.

Another difference between the two instances involved the draft Teesta River Water-Sharing Agreement. In the D.C. instance of the game the India and Bangladesh players signed the Teesta Agreement. However, in the regional instance, the draft

agreement was never signed. The Bangladesh players tried to convince the India players to sign the agreement, but were unsuccessful. The India players cited the need to resolve internal issues before they could discuss this matter with Bangladesh. In reality though, the India players stated internally that they never had any intention of signing the treaty.

Key similarities

Although the particulars of many of the decisions differed from one instance of the game to the other, the motivating attitudes and overall behavior of the countries were similar. For example, the Bangladesh team had trouble managing its neighbors and its internal political processes. In both instances, the Bangladesh players tried to obtain information and assistance from the India and China teams. Their approach was inherently multilateral and reflects the current real-world policy emphasis on basin-wide water-management. There was little the Bangladesh players could do on their own without assistance from outside sources such as the World Bank.

Another similarity was that both the D.C. Pakistan team and the regional Pakistan team decided to cooperate internally with the opposition party. In both instances of the game, players decided that the threat of the drought meant that it was important for both parties to work together to achieve their water goals. Both teams formed committees and named the member of the opposition party to the committee so they could be part of the decision-making process. It is interesting that both teams decided to play the game in this manner, since both the India and Bangladesh teams' opposition party members did not cooperate with the party in power.

Distrust of the China players in the game was also a common theme. However, this distrust was misplaced in the D.C. instance, while, in the regional instance, players were not distrustful enough of the China players. At the same time, we saw that the U.S. players focused on technology and power-based solutions to problems, while the regional players took a more nuanced and diplomatic approach.

Conclusion

The game was designed to focus on information-sharing about water. Through the process of putting on two instances of the game and designing and re-designing, we learned that water flows within and between nations is a complex issue that is embedded in the larger issues of trust, development, and dispute that exist in South Asia.

In particular, game play suggested the following:

- Trust and cooperation are required in order for information-sharing to occur, not the other way around. This opposes the original assumption that sharing information on water will increase cooperation between countries.
- Trust is the key that unlocks many other aspects of cooperation in the region. Countries must learn to cooperate and trust each other before they will be willing to share information on water flow levels.
- Lack of information-sharing on water flows in this region is not a technical issue, but rather a political issue. Upper riparian countries can use water to accomplish goals politically and influence the actions of lower riparian countries.
- Water is important, because it affects economies, and it is a focus for bilateral and multilateral cooperation. Because of this, water can pull countries together and push them apart when it becomes entangled in politics.
- Internal issues tend to easily distract countries from external negotiations. If water becomes an internal political issue, it can affect the political course within countries. Countries must be able to govern internally in order to organize an effective water system between regions within their country, and to engage externally and effectively engage their neighbors.
- Economic and social impacts of water within countries can be as significant as cross-border water flow disputes that drive distrust and instability in the region.
- Bangladesh and Pakistan teams viewed water as a shared resource, while the China team viewed it as an indigenous resource. The India team's views were context-dependent based on their water needs and geographic position. Unless

differing views are known, discussed, and resolved, sharing water or water information will be difficult.

- Water is viewed in international and regional disputes as a shared resource [5-6]. Differing views of water are an issue for the international community, given the existing legal and treaty frameworks on water sharing. Acknowledging them may be important if future conflict is to be avoided.

The insights that emerged from both instances of the game provide a well-rounded understanding of the political, social, and economic issues preventing collaboration and information-sharing.

The differences and similarities between the two instances highlight how internal and external interactions can change (or remain consistent) when regionally based representatives are used rather than subject matter experts based in the United States.

Overall, we observed that commonalities between instances tend to occur on matters of long-standing political relationship, and geography. Differences between the players tend to focus on themes that are either individual choices or possible cultural biases.

Ultimately, players had a hard time dealing with water without dealing with all of the other political, social, and economic issues affecting those involved. In the game design and execution we repeatedly saw that water has to be seen as part of a broader political and economic landscape if it is to be managed and shared peacefully in the region.

Appendix A: Conclusions from the D.C. Instance of the Game

The D.C. instance of the game provided a number of interesting insights on how water is linked to conflict and cooperation in the region.²³ The following is a brief summary of the key findings and a few examples of game play which lead to these insights.

First, trust within countries and between countries is not abundant in the region, resulting in everything from lack of overt cooperation, to covert actions against water systems, to discounting accurate information. Distrust was a driving and consistent theme among all of the countries during the D.C. instance of the game. One example of external trust issues was the interactions between the India and Pakistan players. Throughout the game the Pakistan players tried to entice the India players to share information on water by offering various incentives. The India players would accept the offerings from the Pakistan players and promise to share information in the coming years. However, this promise was never fulfilled as the India players had no intention of sharing information with any country.

An example of internal conflict and trust issues that emerged during the D.C. instance of the game occurred within the India team. Specifically there were multiple water disputes between the Indian central government and the West Bengal region. These internal conflicts and dynamics hindered India's ability to pursue regional interests and negotiations as player leadership was required to manage these conflicts. In addition, the economic effects of water shortages magnified these conflicts.

This example of internal conflict reinforces another observation which is that the economic and social impact of water within countries can be as significant as cross-border conflicts as a force that drives conflict, distrust, and instability in the region. If water becomes an internal political issue, it can affect the political course within countries. Therefore cross-border water flows can be seen in the context of elements of national power when water becomes the focus of international disputes.

²³ For in-depth analysis on the D.C. instance, please see CNA's paper, *Bone Dry and Flooding Soon: A Regional Water Management Game Interim Report* [2].

Water scarcity can cause countries to seek measures of mitigation outside of treaties and negotiations in order to accomplish their water related goals and objectives. During the D.C. instance of the game India players conducted a successful cyber-attack on Chinese water and information networks on the Chinese river system. For the remainder of the game, the India players improved the accuracy of water flow predictions for all their river basins. Because water is actively managed for both agricultural and potable purposes, it can be affected by cyber operations. These operations may not manifest themselves as the classical “attacks” that disable or damage systems. Nation-states may instead engage in a range of cyber actions designed to affect information, flow of water, or use of water. At the same time cyber activity may itself become a destabilizing influence, as an initially “easy” solution becomes fraught with the potential for escalation and retaliation.

Finally, we observed that cheating or deception concerning water flows may actually decrease the level of tension between countries and encourage cooperation on a variety of issues by providing incentives for upstream countries to enter into negotiations and agreements because they know they can “adjust” flows to their advantage, if necessary. During the game, India players routinely made the deliberate decision to limit water flows to downstream countries and not tell them or to provide misinformation. This allowed the India players to continue negotiations and dialogs on military, social, and economic issues without any direct confrontation and even make agreements that they had no intention of keeping. Specifically, during the D.C. instance of the game almost immediately after the India and Bangladesh players signed the Teesta Agreement, the India players took control of the Brahmaputra and completely cut off the water supply to Bangladesh going against the stipulations of the agreement.

The key insight we gained from the D.C. instance of the game is that the commodity in shortest supply in the region is not water, even during a drought. It is trust —trust between countries, as well as between regions and districts within countries. Unless the issue of inter-group trust can be mitigated, the potential for improving the ability to share water, or water information, will always be less than what is possible.

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