Women and Water
in Central Asia and South Asia

Building a Sustainable Future

Final Policy Report

Funded by the U.S. State Department for 2013-2015, this project connected women in Central and South Asia to water and its management. It proposed a program of international exchange of knowledge and leadership to support innovative conflict resolution with a sustainable and multiplying effect. To this end, it brought together young female social entrepreneurs and activists from Kyrgyzstan, Tajikistan, Afghanistan, Pakistan and India to discuss their experiences and innovative solutions involving community-level water management, to enhance their competencies and leadership skills, and to expose them to U.S institutions and the policy community working on water management and gender issues. This was accomplished through in-person and virtual exchanges in the Central and South Asian region and in Washington D.C., and video and web-content production.

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Authors

Marlene Laruelle, Director, Central Asia Program, Research Professor of International Affairs and Associate Director, Institute for European, Russian and Eurasian Studies (IERES), George Washington University.

Deepa M. Ollapally, Research Professor of International Affairs and Associate Director, Sigur Center for Asian Studies, George Washington University. Her areas of expertise are regional security in South Asia, maritime and energy security in the Indo-Pacific, and security discourse of rising powers.

Ariana Leon co-founded the WWCASA project three years ago. She is a nonprofit executive, gender equality expert, and leadership coach. She helps individuals and organizations deepen their connection to their mission.

Julia Collins was WWCASA program assistant. She is a half-Hungarian international energy professional, currently working for ExxonMobil as a Public and Government Affairs Advisor. She has a master's degree in international affairs from GW's Elliott School. Julia is interested in the connection between water, energy and global impact, and passionate about promoting energy efficiency.

The Central Asia/South Asia region continues to be one of great international, regional, local, and personal insecurity. It has to contend with multiple security and development challenges, including risk of state failure in Afghanistan, Pakistan, Tajikistan, and Kyrgyzstan; localized insurgency movements; several decades of state distrust; slow economic development and important social inequalities in each country. All of these factors are exacerbated by food and water insecurity, which is coupled with associated public health challenges.

Around the world, clean water is an essential resource for supporting human welfare and economic growth. As in many other regions of the world, in Central and South Asia, water and energy works as a nexus. About 90 percent of world power generation is water-intense and energy consumption is forecast to increase by 35 percent by 2035. This hike in energy usage is predicted to increase water consumption by 85 percent. However, out of 7 billion people on the planet today, there are 2.5 billion without any reliable access to electricity and 2.8 billion that live in areas of high water stress.[1] The UN Millennium Development Goals set a target of halving the proportion of people without sustainable access to safe drinking water and basic sanitation by 2015, but it has fallen well short of this number. Research has demonstrated the role of water in accentuating conflicts, civil war and insurrection movements. Water management remains therefore a critical issue, and community involvement is needed for economic prosperity and political stability in Central and South Asia.

Women and girls play a key role in water access and use throughout the world. They are responsible for collecting and managing water for household use, including growing food, cooking, cleaning the house and clothing, and family hygiene. However, women have little, if any, access to the actual political and technical decision-making structures on water management. Placing women in a central role as local, regional, and international leaders in water resource management may lead to both short-term and long-term progress in improving human welfare at the local level, while also promoting development and peace regionally.

[1] More details at http://www.worldbank.org/content/dam/Worldbank/Feature percent20Story/SDN/Water/water-infographic-thirsty-energy-441x1257.jpg.

1. The Over-Securitization of Water Issues in Central Asia

In theory, the Central Asian region—Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan—should not endure large water shortages: Central Asia is sufficiently endowed with water (20,525 m^3/year) as compared to the Near East (7,922) or Northern Africa (2,441).[2] But this water is unevenly distributed: the two water towers of Kyrgyzstan and Tajikistan control a vast share of the flows of two of the great rivers, the Amu Darya and the Syr Darya, while the three downstream countries—Kazakhstan, Uzbekistan and Turkmenistan—require large amounts of water to irrigate their arable land. This wealth in water is nonetheless forecast to be majorly reduced as climate change further encroaches, likely having drastic effects on the glaciers of Tian-Shan and the Pamir in the decades ahead and necessitating profound changes in water use. Tian Shan glaciers have lost an average of 5.4 billion tons of ice per year since the 1960s, totaling some 3,000 square km.[3]

As in many other regions of the world, water issues in Central Asia do not result from a natural lack of water, but instead from a complex interplay of political, geopolitical, economic and social motives. These motives can be traced to the collapse of the Soviet Union, when multiple disputes over the water/energy nexus set the Central Asian states at loggerheads with one another, despite their theoretical complementarity—the three downstream countries produce gas and oil, and two upstream produce hydroelectricity. This Soviet water resource management was based on a regional water vs. energy barter system which balanced the water needs of downstream countries and the energy needs of upstream countries. After 1991, negotiations over the exchange of water for oil and gas regularly break down, with newly independent countries questioning the contractual terms.[4]

There is a critical geopolitical dimension of water disputes in Central Asia. Until now, the countries downstream of the two large above-mentioned rivers, the Amu Darya and the Syr Darya, have been in a position of strength relative to the two water-rich countries of Kyrgyzstan and Tajikistan. In these latter, dams dating from the Soviet era were constructed to supply water to agricultural zones situated downstream and not to produce electricity: their structures lack the storage capacities necessary for production in winter, which results in frequent load shedding of water. Kyrgyzstan and Tajikistan hope now to develop their untapped hydroelectric potential by building new massive dams and hydroelectric stations on two tributaries of the Syr Darya, namely the Naryn river in Kyrgyzstan, on which Kambarata 1 and 2 stations are to be built, and the Vakhsh river in Tajikistan,

[2] Jenniver Sehring and Alfred Diebold, *Water Scarcity Analyzed*, 2014, http://www.waterunites-ca.org/themes/19-infoboxes/32-water-scarcity-analyzed.html.

[3] "Glaciers in Central Asia shrinking fast: study," *The Japan Times*, August 29, 2015, http://www.japantimes.co.jp/life/2015/08/29/environment/glaciers-central-asia-shrinking-fast-study/#.VmYquuKYs05

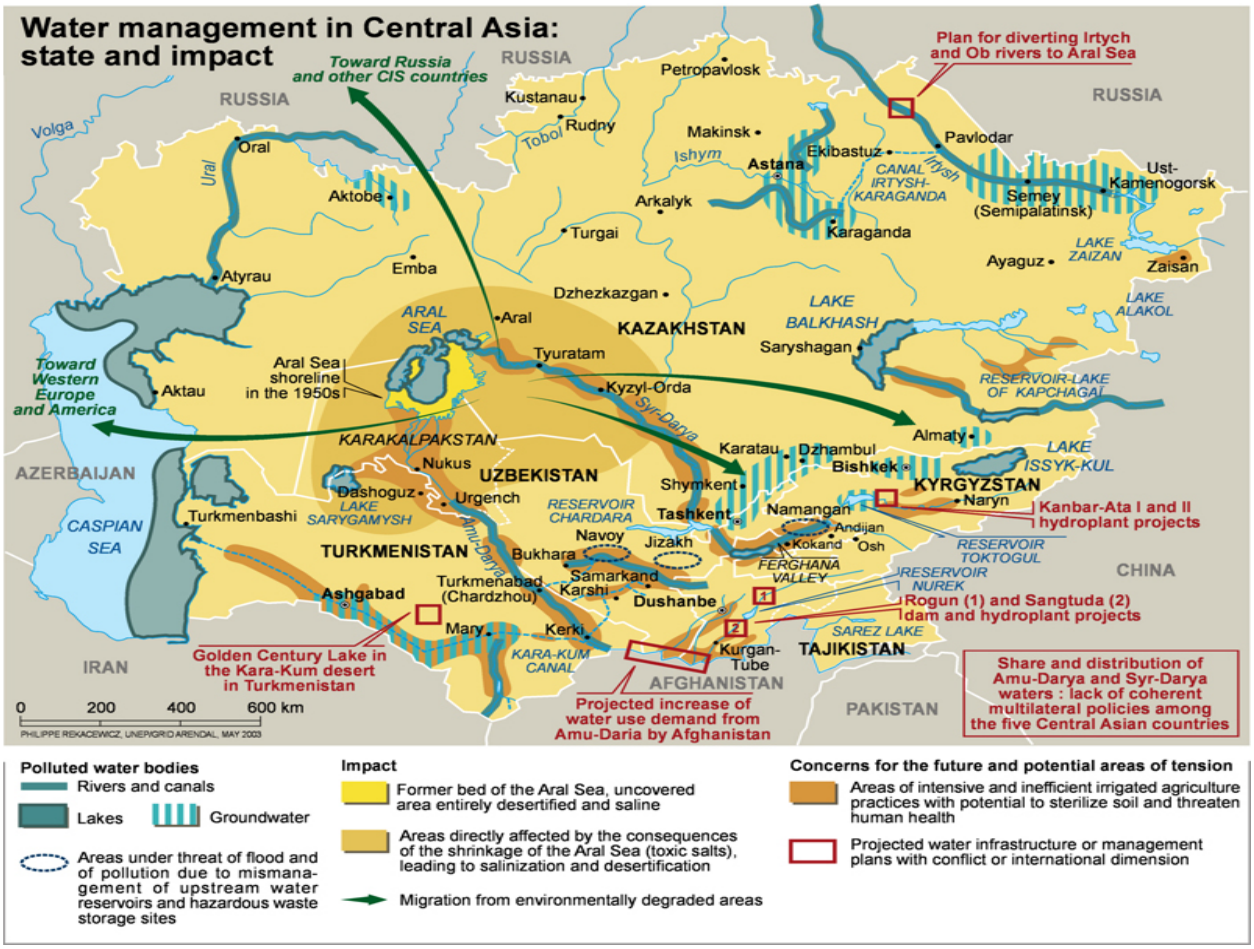
[4] There is an abundant literature on water and the conflicts linked to hydraulic questions in Central Asia: V. A. Dukhovnyi and J. de Schutter, *Water in Central Asia: Past, Present, Future* (Boca Raton, FL: CRC Press, 2011); "Central Asia: Water and Conflict," International Crisis Group Asia Report, no. 34, May 2002; Z. Karaev, "Water Diplomacy in Central Asia," *Middle East Review of International Affairs* 9, no. 1 (2005): 63–69; S. Hodgson, "Strategic Water Resources in Central Asia: In Search of a New International Legal Order," Europe-Central Asia Monitoring Policy Brief, no. 14, May 2010; M. Spoor and A. Krutov, "The 'Power of Water' in a Divided Central Asia," *Perspectives on Global Development and Technology* 2, nos. 3–4 (2003): 593–614; K. Wegerich, "Water Resources in Central Asia: Regional Stability or Patchy Make-Up?," *Central Asian Survey* 30, no. 2 (2011): 275–90; for a more specific approach on Uzbekistan see, among others, J. Azam and G. Makhmejanov, "Isolationism in Uzbek Economic Policy as an Obstacle for Water-Energy Consortium," Working Paper of the Toulouse School of Economics, May 2010.

on which the the Rogun dam[5] and station are set to be built. Both the Naryn and the Vakhsha rivers are "national" ones, even if they play a critical role in forming the cross-border Syr Darya.

According to the UN Convention on the Non-Navigational Uses of International Watercourses adopted in 1997, upstream countries are prohibited from selling water; they can only trade with services linked to water, such as delivery and storage.[3] The Tajik and Kyrgyz authorities find it unacceptable that they should be responsible for the colossal costs of maintaining and upgrading hydroelectric stations that mostly serve the agricultural needs of their downstream neighbors. They consider it their right to build new ones, the main objective of which would be to produce hydroelectricity for domestic consumption and exports abroad.[6] For its part, Uzbekistan considers that construction on cross-border rivers requires the prior agreement of all countries in the region, and asks to be systematically included in all negotiations, while denouncing all interventions by third-party countries. Tashkent claims that both Kambarata and Rogun projects breach international law and would cause water shortages, as well as environmental and economic damage. It would also—but this argument is not voiced by the Uzbek authorities—create more competition for Uzbekistan's electricity export strategy, as both Kyrgyzstan and especially Tajikistan would be able to provide electricity to energy-thirsty South Asia. Many local and external observers consider water to be one of the main risks of interstate conflict in Central Asia, and a key obstacle to regional cooperation.[7]

Yet, technical and economic causes for water mismanagement should not be neglected. Central Asian countries have to manage both their Soviet legacy—with an economic development centered on large energy-consuming industries—*and* the paradoxical effects of the transition to a market economy. Ageing installations and obsolete distribution networks have required costly investments that the states could not finance without international aid. Their markets, however, have proved relatively unattractive for potential foreign investors: administrative apparatuses are riddled by corruption, governments keep electricity prices low to avoid social discontent, and bankrupt companies or others considered strategic are reluctant to pay their electricity bills. In addition, the established elites pay little attention to long-term questions of profitability or sustainable development; they privilege quick revenues in foreign currency and therefore favor centralized, large-scale hydroelectric projects in which they are more likely to gain from bribery. Lastly, the energy choices made by the Central Asian governments are highly politicized: they often rely on rationales that valorize national sovereignty without much connection to economic rationality. The complexity and diversity of these problems, compounded by the further deterioration of interstate relations, as well as the escalation in official discourse, which systematically associates energy negotiations with state security, makes finding nuanced decisions particularly difficult.

[5] *World Bank Brief, Assessment Studies for Proposed Rogun Hydropower Project in Tajikistan*, 2014, http://www.worldbank.org/en/region/eca/brief/ rogun-assessment-studies.
[6] M. Laldjebaev, "The Water-Energy Puzzle in Central Asia: The Tajikistan Perspective," *International Journal of Water Resources Development* 26, no. 1 (2010): 23–36.
[7] Nariya Khasanova, "Revisiting Water Issues in Central Asia: Shifting from Regional Approach to National Solutions," *Central Asia Fellowship Papers*, No. 6, October 2014. See also Vladimir Fedorenko, *Prospects for water cooperation in Central Asia* (Washington DC: Rethink Institute Paper 14, 2014).



Source: GRIDA, http://www.grida.no/graphicslib/detail/water-management-in-central-asia-state-and-impact_f897

Moreover, water use in Central Asia is largely an issue of misuse, and therefore of governance.[8] Household and industrial water usage is largely inefficient, but waste appears to be most rampant in the agricultural sector. The Soviet Union was known for its water-intensive agriculture and using chemical pollutants that depleted the soil, leading to the infamous Aral Sea catastrophe. But the newly independent Central Asian states are pursuing policies similar in many points to Soviet policy, involving the increase of agricultural production (cotton, rice, wheat) and arable lands in the name of food security. However, the deterioration of irrigation facilities due to lack of resources invested by the independent states and permanent postponement of maintenance have aggravated the situation: today, between 30 and 60 percent of the water flows into poorly maintained irrigation channels and is lost through evaporation or leakage. Individual farmers, often on the brink of food insecurity, tend to clandestinely divert water in order to irrigate sections of private land, and collective farms illegally irrigate new plots that often go unreported to authorities. As a result of decades of mismanagement, an increasing amount of land is contaminated with salt, and hundreds of stagnant pools of water, polluted groundwater, or artificial lakes have been created, contributing to a decline in crop quality, with a massive impact on health.

[8] Peter Roudik, *Legislation on Use of Water in Agriculture: Kyrgyzstan, Tajikistan, and Uzbekistan*, 2013 http://www.loc.gov/law/help/water-law/central-asian-states.php.

Irresponsible water management is sometimes even part of policy objectives. This is the case with the 'Lake of Golden Century', which the Turkmen regime has created in the middle of the Karakum Desert. The lake will collect over 10 billion cubic meters of irrigation water from surrounding areas and drain it into the Karashor depression. Initially promoted by President Saparmurat Niyazov and continued by current president, Gurbanguly Berdymukhammedov, the lake is intended as a means to bring about the future irrigation of the Karakum Desert. It is likely to have devastating consequences. Already abused irrigation networks will be dried up and the lake will evaporate on a massive scale during the summer. The area around the lake will be desertified and sand and chemicals will be displaced by wind.

Such levels of water mismanagement are unique in terms of scale: Central Asian states consume more water per capita and per dollar of GDP than residents of any other region on the planet. Turkmenistan and Uzbekistan consume more than twice as much water as the United States, which itself cannot be considered a model. With just 700,000 inhabitants, water consumption in Ashgabat, the capital of Turkmenistan, is equivalent to that of the city of Chicago, which has a population of 2.7 million. With a similar climatic environment and equally developed agriculture, Israel consumes only about 5 percent of the water that Turkmenistan does.

Total water withdrawal per capita by country

	Total water withdrawal per capita (m^3)
Turkmenistan	5,415
Uzbekistan	2,358
Kirghizstan	2,015
Tajikistan	1,740
United States	1,550
Kazakhstan	1,304
Israel	281

Source: FAO, http://www.fao.org/nr/water/aquastat/data/query/index.html?lang=en

The issues are also social, because water is unevenly distributed within Central Asian societies. The two water-rich countries of Tajikistan and Kyrgyzstan are also the poorest in the region. In both countries, more than one third of the population (35 and 33 percent respectively) live below the poverty line, most of them in rural areas. Both have a GDP per inhabitant of 2,700 and 3,400 dollars respectively in 2014 (as compared with 24,000 for Kazakhstan, 14,000 for Turkmenistan and 5,600 for Uzbekistan, before the economic crisis reached the region).[9] Close to half (46 and 48 percent respectively) of their populations continue to work in agriculture, a sector with challenging working conditions as the transition from state-run, collective farms to private farming did not happen without many social, economic and legal difficulties.[10]

Tajik and Kyrgyz societies are also deeply shaped by labor migrations: about 1 million people of each country (of a total of 8 million inhabitants for Tajikistan and 6 million for Kyrgyzstan) work abroad, seasonally or for longer periods of time, mostly in Russia. Migrants send remittances home, which constitutes a large part of the national GDP (remittances comprise 50 percent of Tajikistan's

[9] See the fact sheet from the CIA World Fact book for each country, https://www.cia.gov/library/publications/the-world-factbook/wfbExt/region_cas.html.

[10] Max Spoor, ed., *The Political Economy of Rural Livelihoods in Transition Economies: Land, Peasants, and Rural Poverty in Transition* (London: Routledge, 2009).

GDP, the highest level in the world; Kyrgyzstan follows closely with about one third). These labor migrants impact the societal fabric of rural regions, with men of workforce age being abroad, and women left alone to take care of agricultural work, children's education, and care of the elderly. Moreover, both Kyrgyzstan and Tajikistan are disaster prone (earthquakes, landslides, mudflows, avalanches) due to their geographical location in an active seismic zone and their mountainous landscapes, factors that render rural development more precarious.

For both countries, water access issues take several forms, including access to drinkable water, sanitation issues, etc. Even each of their capital cities, Dushanbe and Bishkek, are unable to provide reliable and constant drinkable water to their inhabitants, forcing people to invest in costly water bottles or face risks of microbiological contamination. But the situation is worse in the countryside.[11]

In Tajikistan, only 45 percent of the rural population has access to centralized water supply systems, while the remainder consumes water from other sources such as springs, wells, irrigation ditches, and canals. These other sources rarely meet sanitary requirements: they are contaminated from animals, human sewage, and agricultural runoff from irrigation systems and pesticides, all of which increase the risk of infectious diseases. Repeated outbreaks of typhoid and other waterborne diseases confirm the poor quality of these water sources. Many ageing water pipes do not meet sanitary requirements, even if the World Health Organization gave a relatively positive assessment of Tajikistan's compliance with its own norms,[12] a fact not confirmed by the other institutions and NGOs working in the country. The situation is particularly critical in the Kurgan-Tyube region, with only one quarter of the population able to access safe drinking water.[13] The population's access to sanitation services is even lower: the rate of access is 44 percent in cities but only 3 percent in villages. The cost of renovating the current system would require such major structural changes and investments that the Tajik government is not able to achieve it alone. UNICEF, USAID and NGOs such as Oxfam have developed many projects to help improve the situation locally: awareness programs have been implemented in schools, and new pipes and centralized water system installed, as well as, in some villages, new water pumps that are owned, run and maintained by locals.[14]

The situation is relatively similar in Kyrgyzstan. In rural regions, half of the population uses water from standpipes located at a distance of 800 feet or less from households, while the other half has to go even further away. About 40 percent of the rural population is unable to access water from water supply systems and still has to rely on ditches, rivers, canals, and springs. Only one quarter of the rural population can access water for 24 hours a day, and one third for less than 12 hours.[15] The

[11] Abdullaev et al, *Water Rights in Central Asia: History, Present and Perspectives* (International Water Management Institute, 2004).
[12] Samaridin Aliev, *Rapid assessment of drinking-water quality in the Republic of Tajikistan: country report of the pilot project implementation in 2004-2005* (World Health Organization and UNICEF, 2010).
[13] UN Water Global Analysis, *Tajikistan*, http://www.who.int/water_sanitation_health/glaas/2014/tjk_tajikistan_en.pdf.
[14] "Failing Infrastructure Threatens Water Supply in Tajikistan," *Borgen Magazine*, February 11, 2014, http://www.borgenmagazine.com/failing-infrastructure-threatens-water-supply-in-tajikistan/. UNICEF, *Water and Sanitation. Tajikistan*, http://www.unicef.org/tajikistan/water_sanitation_4686.html.
[15] John C.K. Daly, 'Kyrgyzstan Rich with Water, but Citizens Go Thirsty," *Silk Road Reporters*, October 20, 2014, http://www.silkroadreporters.com/2014/10/20/kyrgyzstan-rich-water-citizens-go-thirsty/#sthash.VF5iGIrm.dpuf.

sanitation situation is also difficult, as a large number of schools do not receive water supplies from the centralized systems, which contributes to a high level of parasitic diseases among children.[16]

The water/energy nexus in Central Asia is therefore multi-layered. It is international, because the prospect of exporting electricity, in particular to South Asia, constitutes a potential that the Central Asian governments intend to turn to their advantage in the decades to come. It is regional, because the regulation of electricity exchanges between Central Asian countries depends on the ability or inability of the governments to come to an agreement, and today constitutes the main reason for interstate tensions. It is national, because the imbrication of the networks between republics and the lack of connections between regions within a country raises the issue of securing national sovereignty over power circulation and creates large domestic disparities. It is local, because the public administrations and the populations, in rural as well as urban areas, are unable to cope with consumption needs and traditional misuse of water.

It is therefore time for both the local governments and the international community to overcome the geopoliticization of water and stops the securitization narrative about the alleged scarcity of water, and the ensuing risk of interstate conflicts. They should focus on water consumption, local governance, awareness campaigns, and on engaging with local stakeholders, and in particular women, to offer sustainable and locally managed solutions.

2. South Asian Narratives on Water and Security: Is the Cooperative Version Being Drowned Out?

First came the discourse of oil wars, then came the resource wars, and now we are faced with a rising tide of "water wars." At first glance, this seems even more striking because unlike oil and other resources, there is no substitute for water. At the same time, to the casual eye, there would seem to be something incongruous about uttering war and water in the same breath. In official and policy analysis discourse, how is thinking on water being shaped in South Asia? To what extent are conventional competitive realist expectations about the coming water wars being borne out in South Asia? And what will it take for water to become an avenue for cooperation rather than conflict in South Asia?

The Rise of the "Water Wars" Narrative

None other than the former commander of the U.S. Central Command, General Anthony Zinni asserted in 2011 that "[we] have seen fuel wars, we are about to see water wars."[17] Ismail Serageldin, a former vice president of the World Bank declared that, "If the wars of [the 21st] century were fought over oil, the wars of the next century will be fought over water."[18] Others see "water aggression" and hydro-hegemony in the coming years.[19] Most of these predictions are made as if they are foregone conclusions. Indeed, concern with this type of pronouncements prompted the well-known journal *Asian Survey* to feature a special issue on water, politics and Asia in 2014.

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[16] CAWater, *Rural water supply and sanitation in Kyrgyzstan*, http://www.gender.cawater-info.net/knowledge_base/case_study/kyrgyzstan_taza_suu_e.htm.

[17] *Avoiding Water Wars: Water Scarcity and Central Asia's Growing Importance for Stability in Afghanistan and Pakistan*, A Majority Staff Report, Committee on Foreign Relations U.S. Senate, February 22, 2011, p. 11.

[18] http://www.backbonemag.com/Magazine/Big_Ideas_01040701.asp

[19] Iram Khalid, Asia Mukhtar and Zanib Ahmed, "Water Conflict in South Asia: A Potential Conflict for Future Decades," *Journal of Political Studies* Vol. 21, No. 1 (2014), p. 263.

Part of the rise of the "water wars" narrative may be due to insufficient challenge to this kind of alarmist rhetoric. Those officials and experts who work in the traditional military and security areas tend to apply a conventional realist or nationalist outlook to view water controversies between states, and see it as an extension of inevitable inter-state competition in zero sum terms.[20] This script thus gets perpetuated while the water wars rationale itself is not challenged sufficiently with a more cooperative alternative narrative. In other words, how rational is the water wars rationale, needs to be seriously questioned.[21]

When we look at the South Asian context, what unexpectedly emerges is the existence of a much less well told, but much more cooperative story on water relations despite the fraught security environment.

The South Asian Water Scene and Conventional Expectations

Most people are surprised to learn that Asia, not Africa, is the world's most water-stressed continent.[22] The South Asian region has already been declared as water scarce. Four major rivers and basins—Brahmaputra, Indus, Ganges, and Meghna—weave through South Asia. But per capita water availability has decreased by almost 70 percent since 1950 at the same time that rapid economic growth, industrialization and urbanization are proceeding apace.

Whether a state is upstream or downstream is an important distinction as to whether it can potentially wield water as an instrument of political or strategic power. India happens to hold multiple riparian positions (a rarity), as an upper riparian, a mid-riparian and lower riparian. Thus India has a vital stake in all the major river basins in South Asia, and is central in any water discord or accord.

In South Asia, we would expect to find the most tense water relationship between India and Pakistan given their acrimonious history since Partition in 1947. The potential for a water war is based in their competition specifically over the Indus river waters. The Indus river basin is a network of six major rivers flowing between India and Pakistan, with the key 1,800 mile Indus beginning in the Tibetan Himalayas, going west through Indian Kashmir and then across Pakistan into the Arabian Sea. The keyword here is Kashmir—the Kashmir dispute between nuclear weapons states India and Pakistan has been variously described as "an intractable problem" and "nuclear flashpoint." The two countries have already gone to war four times, and clashed innumerable times on the border, not to mention cross-border terrorism that India regularly accuses Pakistan of.

While the headwaters of the Indus originate in China, it is India that can control the waters to the lower riparian Pakistan, making the latter highly vulnerable to water pressure from its rival. To make matters acute, the Indus is Pakistan's agricultural lifeline. Meanwhile, all the ingredients for an Indo-Pakistan war over water have been present since independence: a wider conflict, one party totally dependent on cross-border waters, water scarcity, and lack of funds to construct

[20] For an explanation of the realist and nationalist outlooks, see Nikolai Mirilovic and Deepa Ollapally, "Conclusion," in Henry Nau and Deepa Ollapally eds. *Worldviews of Aspiring Powers* (New York: Oxford University Press, 2012), pp. 211-215.

[21] Undala Z. Alam, "Questioning the Water Wars Rationale: A Case Study of the Indus Waters Treaty," *The Geographical Journal,* 168:4, December 2002.

[22] Brahma Chellaney, "Water, Power and Competition in Asia," *Asian Survey*, Vol. 54, No.4 (July/August 2014) provides a detailed elaboration the drivers of water competition in Asia.

infrastructure to try to offset scarcity.[23] To what extent have conventional realist expectations help up in Indo-Pakistan water relations? Has India utilized the water weapon against Pakistan, especially during war?

Against all odds, water sharing between the two countries was set up under the Indus Water Treaty (IWT)—brokered by the World Bank with a variety of incentives and subtle pressure from the United States—in 1960, which has continued almost intact for 55 years without interruption. Article VII of the Indus Water Treaty states that the two parties recognize they have a common interest in the optimum development of the rivers and calls for cooperation to the fullest extent when undertaking engineering works in the rivers.[24] Under the Treaty, Pakistan gained exclusive rights over three of the common rivers and India got sole rights over another three. Pakistan was allocated 81 percent of the Indus waters, and the agreement calls on each country to exchange flow data and other information regularly, with a system of quotas, checks and inspections to ensure that each country's water quantity and quality is not negatively affected.[25]

South Asian Rivers

Source: Kishor Uprety. A South Asian Perspective on the UN Watercourses Convention, http://www.internationalwaterlaw.org/blog/2014/07/14/dr-kishor-uprety-a-south-asian-perspective-on-the-un-watercourses-convention/

Indeed, the IWT is generally considered the world's most successful water treaty.[26] It has been described as the most significant confidence-building measure that exists between the two rival

[23] Alam, p. 342.
[24] Raja Nazakat Ali et al., "Indus Water Treaty between Pakistan and India: From Conciliation to Confrontation," *The Dialogue* Vol. 10, No. 2, p. 178.
[25] James Kraska, "Sharing Water, Preventing War—Hydro-diplomacy in South Asia," *Diplomacy & Statecraft*, Vol. 20 (2009).
[26] *Avoiding Water Wars,* February 22, 2011, p. 7.

neighbors.[27] This clearly throws some cold water on the inevitability of water wars thesis in South Asia.

South Asia as a Trend Setter?

From an Asia-wide picture, water resources are mostly transnational, but the vast majority of these river basins do not have any arrangements to share water. The only treaties in Asia with specific water sharing formulas happen to be in South Asia—between India and its two downriver neighbors, Pakistan and Bangladesh.[28] India also has various water treaties with its upstream neighbors Nepal and Bhutan. The only country India does not have water treaties with is its upstream neighbor China.

The existence of the IWT does not mean that problems have not cropped up relating to projects on the river on either side, especially dams and storage facilities. Recriminations while fairly rare are not absent, especially from the Pakistani side which feels more vulnerable. Remarkably, provisions for international arbitration or neutral expert have been resorted to only once, with Pakistan questioning India's Baglihar dam project. In that case, the World Bank expert ruled in favor of India in 2007 and the matter was not pursued.[29]

However, the Baglihar instance pointed to how water can be easily politicized as a foreign policy contest. After the World Bank's verdict came out, some Pakistani officials under the new civilian government sought to blame the predecessor military regime for "losing" the case. According to one, "India is stealing water share of Pakistan from the rivers...," and that India has to start dialogue with Pakistan or warned that he foresees a war between the two countries over the water dispute.[30] Earlier, Prime Minister Asif Ali Zardari himself was more circumspect. "The water crisis is directly linked to relations with India. Resolution could prevent an environmental catastrophe in South Asia, but failure to do so could fuel the fires of discontent that lead to extremism and terrorism."[31] However, sabre rattling has been the exception, rather than the rule even in the India-Pakistan case.

The 1996 Treaty on the Sharing of the Ganges Waters between India and Bangladesh has also stood the test of time, despite controversies erupting from time to time. This thirty year Treaty signed by India and the Awami League government was strongly opposed by Bangladesh's then-opposition, the Bangladesh Nationalist Party (BNP). Dhaka's relations with India (in particular the extent to which the Awami League is seen as "soft" on India or not) is a regular feature of Bangladeshi domestic politics. But when the BNP came to power in 2001, it did not ask for review or termination of the Treaty.[32]

It is widely believed that Indian foreign minister I.K. Gujral who was in office in 1996 was chiefly responsible for getting the accord signed, and moving the halting 25 years of negotiations forward.

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[27] For details on the IWT, see for example, Uttam Kumar Sinha, Arvind Gupta and Ashok Behuria, "Will the Indus Water Treaty Survive?" *Strategic Analysis*, Vol. 36, No. 5.
[28] Chellaney, p. 627.
[29] Zee News (India), June 1, 2010.
[30] *The Nation* (Pakistan), January 3, 2010. The official admitted that India had served two notices to the government before the construction of the dam but that Pakistan had somehow not responded.
[31] Asif Ali Zardari, "Partnering with Pakistan," Op Ed, *The Washington Post*, January 28, 2009.
[32] Punam Pandey, "Bangladesh, India and Fifteen Years of Peace: Future Directions of the Ganges Treaty," *Asian Survey,* Vol. 54, No. 4 (July/August 2014), p. 654.

Apart from the so-called Gujral Doctrine which, in its principles, was a departure from the strict reciprocity expected of neighbors from previous governments, Gujral had been deeply involved in Track II Indo-Bangladesh efforts on thorny bilateral issues including water and come to appreciate the need for a speedy resolution on the Ganges water sharing.[33] This was a case of people to people diplomacy handily paying off.

The Ganges Treaty also showed that it is possible to fashion innovative principles on transnational flows. The Treaty guaranteed downstream Bangladesh a specific amount of cross-border inflow during the seasonal dry months, a new concept in international affairs. Ironically, low lying Bangladesh gets too much rain during the monsoon months and is parched in the dry months. As the lowermost riparian state, Bangladesh has an extremely high dependency ratio on cross-border water inflows, receiving about 91 percent of its waters from India, though a large portion of that originates in the Tibetan plateau under China's control.[34] The Indian government hammered out the Treaty despite objections from two of its own states whose water availability was affected. And the Bangladesh government went ahead with the water sharing equation despite the deep suspicion against India and outcry by the opposition political party. Thus another factor that cannot be underestimated is the importance of political will.

What Does This Mean for Policy?

As a scarce vital resource that impinges on national sovereignty and economic development, water can become a competitive or cooperative tool in the hands of national decision-makers. The question is how to make this arena a site for joint action that brings mutual benefits rather than another arena for conflict and suboptimal outcomes for the parties involved. In fact, especially under adverse geopolitical conditions, water sharing can be a huge confidence building measure. At the very moment during the 1999 Kargil conflict between India and Pakistan as the countries mobilized for war, technical communities set up under the IWT continued to meet in the shadow of war when all other communication had ended.

It is imperative that a cooperative discourse on trans-border water management makes headway at the official and popular levels to challenge the water wars narrative. The links being made between security, sovereignty, national identity and water threatens to hijack the very real possibility of joint regional and international action. Ironically, it is the cooperative narrative that has been dominant on the ground, if not at the level of rhetoric. This is the case even in the most hostile geopolitical and military conditions obtaining in South Asia between India and Pakistan. It is also the case between India and Bangladesh, where there is considerable acrimony if not military tension.

Even internationally, the story is much more hopeful than the sabre rattlers would have us believe: a close study of trans-border water interaction (cooperative or conflictual) between two or more countries over an extended period made the startling finding that "the rate of cooperation overwhelms the incidence of acute conflict."[35] There is a pressing need to bring the water management experts and community into the national security policy making community. In order that the latter does not appropriate water discourse or frame it a way that empowers the military

[33] For a Bangaldeshi view on Gujral's contribution in this regard, see Rehman Sobhan, "I.K. Gujral: A Tribute from Bangladesh," *The Daily Star*, December 13, 2012.
[34] Chellaney, p. 642.
[35] Aaron Wolf et al., "Navigating Peace: Water Can be a Pathway to Peace, Not War," Woodrow Wilson International Center for Scholars, July 2006.

over development experts, there has to be a level playing field in the policy arena. It could well be that national security managers have not been exposed to the ideas and evidence that are percolating elsewhere; the information simply might not have filtered in. Of course, political will is essential. The examples in South Asia show that there is no substitute for support from the very top for water sharing agreements: in the IWT, India's first Prime Minister Jawaharlal Nehru himself was involved in pushing the Treaty forward despite wide reservations; likewise in Bangladesh, Prime Minister Sheikh Hasina braved political opposition to sign the Ganges Treaty with India.

From a U.S. policy perspective, U.S. assistance should target activities like strengthening river basin dialogues and establishing community based water management projects on shared watersheds. The U.S. can also explicitly or implicitly back regional and international efforts, harking back for example to the successful soft intervention in the IWT. With the new global priority of climate change and its impact on water resources, American involvement seems more important than ever. But it should be kept in mind that sustainable water management needs equitable partnerships, calling for more inclusive negotiations rather than bringing American pressure to bear.[36]

What stands out most as an immediate attractive instrument to further cooperation on water is people to people diplomacy that includes the communities most affected by water politics. In this the participation of women and local non-governmental organizations cannot be overstated. Transnational linkages at the expert level is also key to creating so-called "epistemic" communities that share knowledge and common purpose, something that can be done at the bilateral, regional or global levels. Conventional realist wisdom is neither sufficient nor necessarily accurate; the narrative it propagates must not be allowed to dominate without challenge from more cooperative versions based that also happen to be based on hard evidence. As it happens, the interlocutors for this version are mostly found at the grass-roots and unofficial levels.

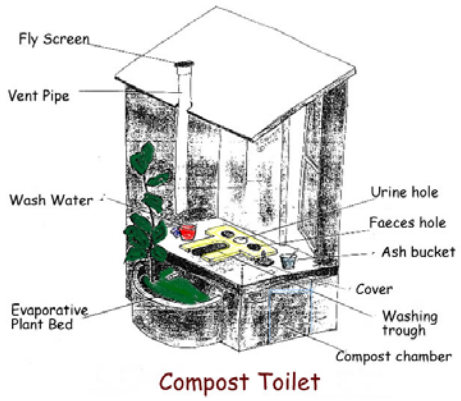
3. Water and Women: An Unequal Burden

Women and girls play a key role in water access and use throughout the world. They are often responsible for collecting and managing water for household use, including growing food, cooking, cleaning the house and clothing, and family hygiene. Women and children spend up to six hours a day collecting heavy loads of water.[37] This labor is generally undervalued and represents a significant amount of time that could be spent on income-generating work, caring for family members, or education.[38]

Moreover, the water women and children collect is usually not clean, putting them at risk for waterborne diseases. A 2012 study suggests that reducing water collection time by 15 minutes could reduce under-five children's mortality rate by 11 percent and significantly reduce diarrhea caused by waterborne disease.[39]

Poor sanitation is also a huge concern for women. Hand-washing rates around the world are very low, yet critical to preventing diseases such as diarrhea.[40] Fewer than one in three people have access to a toilet.[41] Women and girls often wait hours for a private time to relieve themselves,

[36] Uttam Kumar Sinha, "50 Years of the Indus Water Treaty: An Evaluation," *Strategic Analysis*, 34:5, p. 670.
[37] http://www.unwater.org/fileadmin/user_upload/unwater_new/docs/water_and_gender.pdf
[38] https://openknowledge.worldbank.org/bitstream/handle/10986/3789/WPS5302.pdf?sequence=1 pg 2
[39] http://unesdoc.unesco.org/images/0023/002318/231823E.pdf pg 22
[40] http://www.tippytap.org/the-stats



putting their physical health at risk. Walking long distances to collect water and to find a place to go to the bathroom puts them in danger of sexual abuse and harassment. Women and girls require access to sanitation facilities for menstruation hygiene management and clean water for washing. When girls lack access to a clean, safe toilet in school, they are likely to miss days of school during menstruation.[42] This also affects women in the workplace if they do not have access to sanitation facilities.[43] This time spent away from school and other income-generating work negatively impacts the entire community.[44]

Limited water access is exacerbated by the increasing severity and frequency of natural disasters, such as droughts and floods. This affects the poor, especially women, acutely.[45] Urbanization and population growth have put additional pressure on an already severe problem. There has been a 20 percent increase in the number of people in cities who lack access to basic water and sanitation facilities.[46] Women who used to walk long distances in a rural setting may now have to wait for hours near a pump in a slum or urban area, and the water is often poor quality. Conflict creates the additional problems of service provision and delivery, especially with massive internally displaced populations who have little access to safe water, health services, or education. And the poor are especially affected by the fluctuations in market prices caused by oppressive social and political developments.

By 2025 it is estimated that two-thirds of the world's population will live in areas facing moderate to severe water stress.[47] Freshwater availability is projected to decrease. Floods increase the exposure of harmful chemicals already in the water, such as arsenic. This especially effects women and girls who fetch, cook with, and handle water more than men. Arsenic poisoning causes skin lesions and other deformities that carry stigmas and cause social repercussions, including shunning and exclusion. The solutions to these water and sanitation challenges must be multi-faceted, varied, locally grounded, and community driven. Since women are disproportionately affected by poor water access and sanitation, they are in the best position to offer solutions. Empowering women to make decisions is key to community well-being and involving women in water projects significantly increases their effectiveness.[48]

Simple technologies can offer huge improvements for women and communities. The Tippy Tap, for example, is a hands-free way to

[41] http://water.org/water-crisis/womens-crisis/
[42] http://www.righttowater.info/wp-content/uploads/BOOK-1-INTRO-22FEB.pdf pg 36
[43] http://www.righttowater.info/wp-content/uploads/BOOK-1-INTRO-22FEB.pdf pg 38
[44] http://www.zaragoza.es/contenidos/medioambiente/onu/1325-eng_We_cant_wait_sanitation_and_hygiene_for_women_and percent20girls.pdf executive summary
[45] http://unesdoc.unesco.org/images/0023/002318/231823E.pdf pg 22
[46] http://www.unwater.org/topics/water-and-urbanization/fi/
[47] http://www.unwater.org/publications/publications-detail/en/c/204294
[48] UN Water. (2013). UN-Water factsheet on water and gender, World Water Day 2013.

wash hands without running water. A hand-washing campaign accompanies Tippy Tap construction to teach people why hand-washing is so important and encourage their behavior change.[49] The Ecosan dry toilet is another technology that enables schools with little or no running water to provide toilets onsite for boys and girls. The waste gets used for fertilizer, making it sustainable and nonpolluting.

4. Empowering Women, and Strengthening Regional Cooperation

The Women and Water in Central Asia and Sout Asia (WWCASA) project fosters people-to-people relations and a south-to-south transfer of knowledge in order to enhance the capacity of water resource management. It brings together young female social entrepreneurs and activists from Kyrgyzstan, Tajikistan, Afghanistan, Pakistan, and India to discuss their experiences and share innovative solutions for community-level water management. It also serves to expose them to U.S. institutions and the policy community that is working on water management and gender issues. The project helps women to work together on community-based, innovative solutions for water management, such as the community allocation of new equipment and techniques; new irrigation technologies such as drip irrigation, or water sanitation via green energy; and new strategies of reasonable payment for water services by the community.

Co-led by the George Washington University's Central Asia Program and Global Gender Program in association with the Sigur Center for Asian Studies, the project had partner NGOs in each of the five countries.

In India, the Watershed Management Group (WMG) works on community-based solutions to ensure the long-term prosperity of people and environmental health. These include: spring protection and drinking water systems; school hygiene promotion; latrine construction; water quality, watershed management, and rainwater harvesting. It promotes community-led processes and requires at least fifty percent female participation in all projects.

In Pakistan, the Hisaar Foundation for Water, Food, and Livelihood Security advocates a judicious use of water and offers low-cost practical solutions. As a non-profit organization based in Karachi, it has developed into a unique institution that provides a platform for bringing together issues women deal with regarding development, water, food, and livelihood. They seek solutions appropriate to dealing with this water-food-livelihood nexus in an integrated manner.

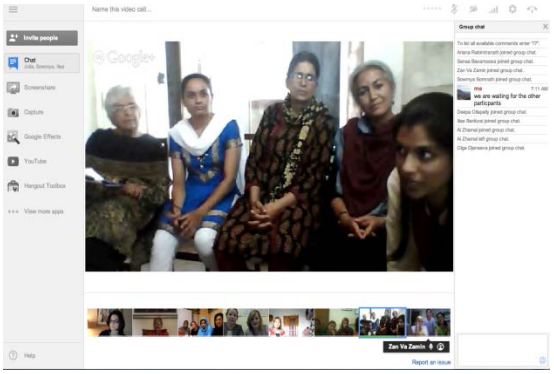
[49] www.tippytap.org

In Afghanistan, Afghans4Tomorrow (A4T) focuses on sustainable education, health, and agriculture projects. It operates two schools, one in Kabul, and another in Shekh Yassin, Wardak Province. They have developed cooperative poultry farms, and address the public health needs of vulnerable Afghans by treating thousands of people—especially women, children and the elderly—through their Health Post in Wardak.

In Kyrgyzstan, ALGA was founded to protect the right of rural women and to serve their interests, notably in relation to legal issues, income generation, water access, and gender equality. Its main program in the Chui Valley focuses on developing women's capacities in sustainable agriculture, natural resource management, and increasing access to the market. They mobilize communities, foster women's leadership, empower women to overcome gender stereotypes, and strengthen the status of women.

In Tajikistan, Zan va Zamin (Women and Earth) works to attain access to land for landless farmers, supports diversified farming methods, and promotes the conservation of biodiversity through responsible natural resource management. The group has established twelve "field schools" where female farmers can learn eco-agriculture techniques. A percentage of the profits from acquired revenues are then reinvested into community works projects, including in women's health and girls' education. In 2012, Zan va Zamin won the Equator Prize, awarded biennially to recognize and advance local sustainable development solutions for people, nature, and resilient communities.

5. WWCASA Success Stories. South-South Networking and Learning



Video Conference – Google Hangout

On May 16, 2013, project participants met for the first time over Google Hangout to discuss their work on water issues and begin collaborating on best practices. The participants in Afghanistan, India, Kyrgyzstan, Pakistan, and Tajikistan traveled long and far to the partner NGO office in each country to meet one another, receive training on video storytelling, and

learn more about the project and the other participants. After the morning workshop, the participants and NGO partners got online to meet face to face.

Despite unsteady Internet connections, language barriers, and a few initial technical difficulties, the video conference was a success. Everyone took the opportunity to introduce themselves and their work. The women described the challenges that they face in their rural and urban homes in the following similar terms: a lack of clean and ample water; the long distances to the water supply; lack of any sanitation system; a lack of community hygiene awareness; natural resource degradation; and frustration with the pace of local development. The most fascinating part of the conference was the variety of approaches that are used to mitigate the very same water-related challenges. Some women spoke of their spiritual connection to the earth and the moral responsibility to manage water sustainably. Other participants took a systematic approach and cited facts and figures describing their water-related work.

In-person Conference 2013 – Kyrgyzstan

From September 28 to October 1, 2013, the group met for the first time in person in Bishkek, Kyrgyzstan. There they participated in a series of workshops, two site visits, and a full-day public symposium. The gathering successfully accomplished its goals to foster peer-to-peer knowledge exchange and regional cooperation.

The Kyrgyz host partner, ALGA Rural Women's Organization, arranged a visit to a village grade school that had recently installed EcoSan waterless toilets. The school built an annex to the classroom building in order to house the sinks and toilets for girls and boys. The toilets do not use water, are odorless, and the degraded waste can be used as fertilizer after two years. This project drastically improved conditions for children, who before had to use an unsecure pit latrine outside, including in the harsh winter, with no hand-washing station. Thanks to its success, visitors frequently come to the school to see the model project and several village families have also installed EcoSan toilets in their homes. Conference participants asked how they could bring this waste management system back to their village.

On October 1, the group led a series of four panel discussions hosted at the OSCE Academy. Discussions focused on civic engagement, women's rights, resource management and rural development, and teaching water, sanitation, and hygiene (WASH) to communities. Many of the project participants served as panelists and highlighted their own work.

In-person Conference 2014 – India

The second in-person conference took place in Mumbai and Panchgani, India, on September 24-30, 2014. The group visited the Mahatma Gandhi Center of Sanitation, Cleanliness and Community Health. After a number of presentations regarding water, sanitation, and hygiene in India in general and in Mumbai in particular, the participants took a walk through the nearby slum. This exposed them to the living conditions of the people and gave insight into successful community toilets, water usage and supply, and access to hospitals and other amenities.

Initially, free community toilets rapidly fell into a state of disrepair because nobody felt a sense of ownership of the toilet block. Now the toilets charge a small amount but have a caretaker who maintains the water supply. They also have a solar panel that provides electricity to light the facilities for safe use at night. The day ended with a session in which the participants presented their work on water to a group of local activists.

The second half of the conference took place in Panchgani, a hill station in Maharashtra. Participants visited a public primary school to get a first-hand look at a hygiene and hand-washing program, and also went to the village nearby to see how health, and accordingly school attendance, has improved. The team also visited a few of the students' homes to see first-hand how the children had implemented the knowledge gained from these school programs, such as building hand-washing stations with their parents and encouraging the hygienic behavior of all household members.

In the afternoon, participants visited another village, Abhepuri, and met Lalita, the potter who creates low-cost smokeless cook stoves or "chulhas." Lalita explained that the chulhas concentrate heat more quickly than traditional stoves and require less firewood. She now runs a chulhas pottery-training program in her village, and other towns also seek out her expertise. The team heard similar stories from other women who established seamstress training and sewing machine loan programs.

The conference also included a video workshop in which the women practiced skills and learned about message, script, filming, and editing, to improve their own video recording.

Bringing Awareness to Washington, D.C.

In 1993, the United Nations declared March 22 as the official "World Day for Water" in order to raise awareness and focus attention on sustainably managing this important resource. In honor of this year's World Water Day, WWCASA organized a seminar at George Washington University on March 22, 2014. Partnering with WASH Advocates, we convened a roundtable breakfast event to discuss energy and water challenges, and to share knowledge on improving management and governance through enhanced social inclusion and the participation of women.

Dr. Marcus King, the John O. Rankin Associate Professor of International Affairs and Environmental Security expert, discussed the importance of water as an instrument of U.S. soft power across three dimensions of foreign policy: defense, development, and diplomacy. Dr. King highlighted the water-energy nexus by pointing out that 15 developing countries generate more than 80 percent of their electricity through hydropower. He also mentioned that in his Climate and Water Security Initiative findings, gender is an import consideration at all phases of the implementation of water projects.[50]

Rebecca Fishman, WASH Advocates Operations and Special Project Director, provided a high-level overview of Water Sanitation and Hygiene (WASH) with linkages to gender, and discussed her office's work and its robust network, which brings together people and organizations working on these issues, such as UNICEF, Paul Simon's Water for World Act, and the Australian-based Global Poverty Project.

[50] Marcus King, Water, *U.S. Foreign Policy and American Leadership*, October 2013, GWU, http://elliott.gwu.edu/sites/elliott.gwu.edu/files/downloads/faculty/king-water-policy-leadership.pdf.

Women's Rights Researcher, Amanda Klasing, from Human Rights Watch, presented water from a rights perspective. She encouraged the idea that access to water and sanitation should be considered a human right, and discussed why this is necessary for poverty reduction and the realization of many other fundamental rights for women and girls, including the rights to health and education.

Kara Gerson, Voss Foundation's Executive Director, spoke about the connection between women and WASH in Sub-Saharan Africa as part of what Voss Foundation calls "The Ripple Effect," demonstrating how water powers many sectors of development.

Video Beyond Borders

WWCASA promotes innovative communication on water resource management through the visual arts. The visual arts are accessible to everyone across language and literacy barriers, which disproportionately affect women. India has been a leader in using social media as a learning tool, such as the tippy tap video created by one of our partners, which won a YouTube award (http://grampari.org/).

One of the most compelling and ongoing activities of the Bishkek and Mumbai meetings was the sharing of video footage that participants had produced of their countries. The footage from Afghanistan showed an elderly woman in a refugee camp carrying and hand-pumping several big containers of water, while men stood by watching; a woman who had been married as a child walking up treacherously steep and uneven steps ten times daily with a heavy water container; and, lastly, an elderly mother climbing up a ladder and walking across her roof to ask neighbors for permission to use their water source so that she could fill her containers.

From India, we saw footage of a village woman who had learned, and then taught her community, about the detrimental effects of forest burning on groundwater capture; of a community that had organized to clean and restore dried lakes; and interviews with women who hand-plant seeds, manage the local forest, and use the village's new "house of dignity" (toilets). In Pakistan, we saw footage of a female irrigation engineer discussing newly constructed, safer water access points where women bathe and wash laundry with their children nearby; and of several socio-economically diverse households that waste water cleaning floors and entry ways.

From Tajikistan and Kyrgyzstan we saw videos about women digging ditches to divert water channels between villages; one village of 450 families shares one hand pump, and in another village, 600 families—in fact women and children—have to walk 600 meters along dangerous highways to get water; and in yet another village, 12,000 people have to share one hand pump, so they were diverting a water channel for better access.

The videos enabled everyone to share the common challenges they face with one ansother, but also to show their best practices. Several participants commented that they had not known that conditions in neighboring countries were so similar to their own. This fosters a feeling of solidarity among the group, and the realization that they can learn from each other.

United Nations Recognition

To celebrate the completion of the International Water for Life Decade (2005-2015), the United Nations organized an exhibition in its New York

headquarters, and highlighted the figure of one of our participants, Urmila, from India. A photo from her video interview was selected for the "Voices from the people" exhibit, which is currently on display at the UN Headquarters in New York City. Urmila came from the education sector to join Gram Vikas, one of the largest NGOs working on water sanitation and hygiene (WASH) in India. She is focused on tribal women's issues and has helped over 50,000 women in nearly 500 villages get access to safe drinking water and hygienic sanitation facilities.

Human Connection

Building and strengthening these women's relationships has untold benefits. The "meetings in between the meetings" were often the most valuable ones for commiserating, sharing ideas, and generating solutions. The Women and Water in Central and South Asia team continues to reach out and interact, including when not physically together, via email, our website, their closed Facebook group page, poetry, and even artwork. The project team continues to support and empower the WWCASA women to maintain close interacting beyond this grant, through which they initially came together.

Tajik and Afghan ladies dance the foogdi after the Indian village women's welcome ceremony