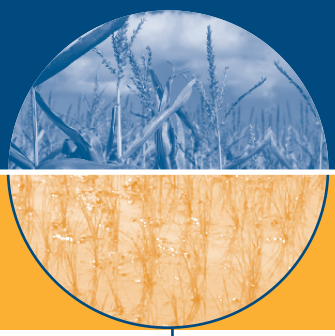
Navigating Peace Initiative



Water Conflict and Cooperation: Looking Over the Horizon

The reality of water's roles in conflict and cooperation is more complex than the political rhetoric of "water wars" often implies. While the potential for violent and social conflict over water is clear, the level of this conflict is not so clear-cut. Exhaustive research by Aaron Wolf of Oregon State University has firmly established that international violent conflict is rarely—if ever—caused by, or focused on, water resources. Historically, formal and informal international political institutions managing water have adapted to increased scarcity without resorting to the expensive and inefficient means of war to secure water supplies. Instead, nations cooperate to manage their shared water resources (although equity and power differences mean all cooperation is not the same).

This history does not, however, close the door on the possibility of water wars. By 2050, as many as 7 billion people—more than currently alive in the world today—may live under conditions of water scarcity and stress. A large body of scholarly research suggests that environmental degradation may catalyze violent conflict *within* states, so the future may not resemble the past.

However, little systematic research examines an important corollary: that environmental cooperation may be a useful catalyst for regional peacemaking. The unique qualities of water could provide the cornerstone for efforts to build confidence and peace in regions with unsettled interstate relations. Shared water resources could offer avenues for trust building that can in turn support predictable and more enmeshed relations among potential adversaries.

The Navigating Peace Initiative's Water Conflict and Cooperation Working Group commissioned four policy briefs to identify the current and emerging trends in water conflict and cooperation. With the generous support of the Carnegie Corporation of New York, and led by ECSP Director Geoff Dabelko, the working group sought to:

- Understand the current mix of conflict and cooperation over water along wider continua of conflict and at more levels of analysis than have customarily been considered;
- Anticipate future possibilities for violent water conflict given the negative indicators in many areas of water management; and
- Formulate proactive steps for heading off conflict and encouraging cooperation.

Water Conflict and Cooperation Working Group Members

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Navigating Peace

www.wilsoncenter.org/water

(Photo © Avner Vengosh)

WATER CAN BE A PATHWAY TO PEACE, NOT WAR

By Aaron T. Wolf, Annika Kramer, Alexander Carius, and Geoffrey D. Dabelko

"Water wars are coming!" the newspaper headlines scream. It seems obvious—rivalries over water have been the source of disputes since humans settled down to cultivate food. Even our language reflects these ancient roots: "Rivalry" comes from the Latin *rivalis*, or "one using the same river as another." Countries or provinces bordering the same river (known as "riparians") are often rivals for the water they share. As the number of international river basins (and impact of water scarcity) has grown, so do the warnings that these countries will take up arms to ensure their access to water. In 1995, for example, World Bank Vice President Ismail Serageldin claimed that "the wars of the next century will be about water."

These apocalyptic warnings fly in the face of history: No nations have gone to war specifically over water resources for thousands of years. International water disputes— even among fierce enemies—are resolved peacefully, even as conflicts erupt over other issues. In fact, instances of cooperation between riparian nations outnumbered conflicts by more than two to one between 1945 and 1999. Why? Because water is so important, nations cannot afford to fight over it. Instead, water fuels greater interdependence. By coming together to jointly manage their shared water resources, countries can build trust and prevent conflict. Water can be a negotiating tool, too: It can offer a communication lifeline connecting countries in the midst of crisis. Thus, by crying "water wars," doomsayers ignore a promising way to help *prevent* war: cooperative water resources management.

Of course, people compete—sometimes violently—for water. Within a nation, users—farmers, hydroelectric dams, recreational users, environmentalists—are often at odds, and the probability of a mutually acceptable solution falls as the number of stakeholders rises. Water is never the single—and hardly ever the major—cause of conflict. But it can exacerbate existing tensions. History is littered with examples of violent water conflicts: Just as Californian farmers bombed pipelines moving water from Owens Valley to Los Angeles in the early 1900s, Chinese farmers in Shandong clashed with police in 2000 to protest government plans to divert irrigation water to

Number of Countries Sharing a River Basin

NUMBER OF COUNTRIES	INTERNATIONAL BASINS
3	Asi (Orontes), Awash, Cavally, Cestos, Chiloango, Dnieper, Dniester, Drin, Ebro, Essequibo, Gambia, Garonne, Gash, Geba, Har Us Nur, Hari (Harirud), Helmand, Hondo, Ili (Kunes He), Incomati, Irrawaddy, Juba-Shibeli, Kemi, Lake Prespa, Lake Titicaca-Poopo System, Lempa, Maputo, Maritsa, Maroni, Moa, Neretva, Ntem, Ob, Oueme, Pasvik, Red (Song Hong), Rhone, Ruvuma, Salween, Schelde, Seine, St. John, Sulak, Torne (Tornealven), Tumen, Umbeluzi, Vardar, Volga, and Zapaleri
4	Amur, Daugava, Elbe, Indus, Komoe, Lake Turkana, Limpopo, Lotagipi Swamp, Narva, Oder (Odra), Ogooue, Okavango, Orange, Po, Pu-Lun-T'o, Senegal, and Struma
5	La Plata, Neman, and Vistula (Wista)
6	Aral Sea, Ganges-Brahmaputra-Meghna, Jordan, Kura-Araks, Mekong, Tarim, Tigris and Euphrates (Shatt al Arab), and Volta
8	Amazon and Lake Chad
9	Rhine and Zambezi
10	Nile
11	Congo and Niger
17	Danube

Note: From "International River Basins of the World" by Aaron T. Wolf et al., 1999, *International Journal of Water Resources Development 15*(4), 387–427. Adapted with permission of the author.

cities and industries. But these conflicts usually break out *within* nations. International rivers are a different story.

The world's 263 international river basins cover 45.3 percent of Earth's land surface, host about 40 percent of the world's population, and account for approximately 60 percent of global river flow. And the number is growing, largely due to the "internationalization" of basins through political changes like the breakup of the Soviet Union, as well as improved mapping technology. Strikingly, territory in 145 nations falls within international basins, and 33 countries are located almost entirely within these basins. As many as 17 countries share one river basin, the Danube.

Contrary to received wisdom, evidence shows this interdependence does not lead to war. Researchers at Oregon State University compiled a dataset of

every reported interaction (conflictive or cooperative) between two or more nations that was driven by water in the last half century. They found that the rate of cooperation overwhelms the incidence of acute conflict. In the last 50 years, only 37 disputes involved violence, and 30 of those occurred between Israel and one of its neighbors. Outside of the Middle East, researchers found only 5 violent events, while 157 treaties were negotiated and signed. The total number of water-related events, between nations also favors cooperation: The 1,228 cooperative events dwarf the 507 conflict-related events. Despite the fiery rhetoric of politicians—aimed more often at their own constituencies than at the enemy—most actions taken over water are mild. Of all the events, more than 60 percent are verbal, and more than two-thirds of these were not official statements.

Simply put, water is a greater pathway to peace than conflict in the world's international river basins. International cooperation around water has a long and successful history; some of the world's most vociferous enemies have negotiated water agreements. The institutions they have created are resilient, even when relations are strained. The Mekong Committee, for example, established by Cambodia, Laos, Thailand, and Vietnam in 1957, exchanged data and information on the river basin throughout the Vietnam War.

Israel and Jordan held secret "picnic table" talks to manage the Jordan River starting in 1953, even though they were officially at war from 1948 until the 1994 treaty. The Indus River Commission survived two major wars between India and Pakistan. And all 10 Nile basin riparian countries are currently involved in senior government–level negotiations to develop the basin cooperatively, despite the verbal battles conducted in the media. Riparians will endure such tough, protracted negotiations to ensure access to this essential resource and its economic and social benefits.

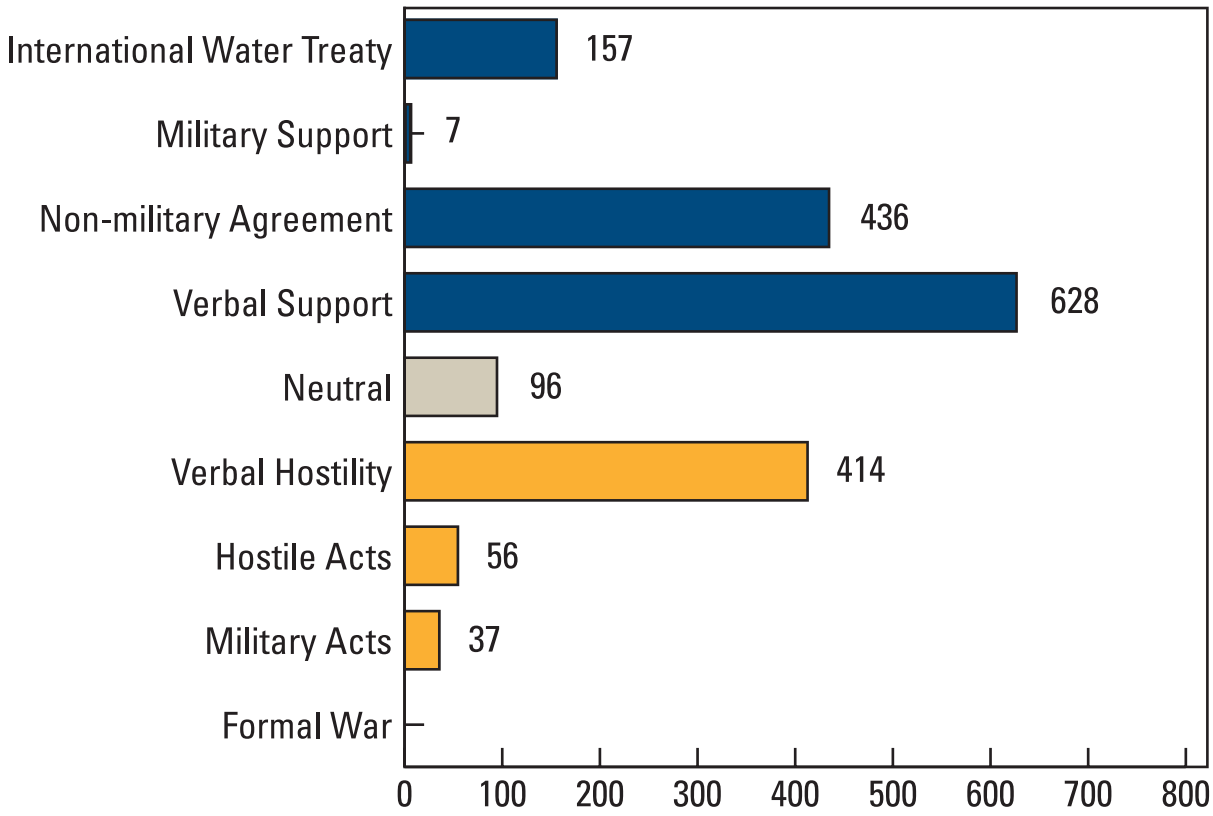
Southern African countries signed a number of river basin agreements while the region was embroiled in a series of wars in the 1970s and 1980s, including the "people's war" in South Africa and civil wars in Mozambique and Angola. These complex negotiations produced rare moments of peaceful cooperation. Now that most of the wars and the apartheid era have ended, water management forms one of the foundations for cooperation in the region, producing one of the first protocols signed within the Southern African Development Community (SADC).

Today, more than ever, it is time to stop propagating threats of "water wars" and aggressively pursue a water peacemaking strategy. Why?

- "Water wars" warnings force the military and other security groups to take over negotiations and push out development partners, like aid agencies and international financial institutions.
- Water management offers an avenue for peaceful dialogue between nations, even when combatants are fighting over other issues.
- Water management builds bridges between nations, some with little experience negotiating with each other, such as the countries of the former Soviet Union.
- Water cooperation forges people-to-people or expert-to-expert connections, as demonstrated by the transboundary water and sanitation projects Friends of the Earth Middle East conducts in Israel, Jordan, and Palestine.
- A water peacemaking strategy can create shared regional identities and institutionalize cooperation on issues larger than water, as exemplified by the formation of SADC in post-apartheid southern Africa.

Good governance—the lack of corruption—is the basic foundation for the success of any agreement. Obviously, money is also a big challenge. But good

1,831 State-to-State Water Interactions in Transboundary Basins, 1946–1999



Note: The data are from "International Waters: Identifying Basins at Risk" by Aaron Wolf, Shira Yoffe, and Marc Giordano, 2003, *Water Policy* 5(1), 31-62. Adapted with permission of the author.

governance and money are not enough. Several policy initiatives could help peacemakers use water to build peace:

1. **Identify and utilize more experienced facilitators who are perceived as truly neutral**. The World Bank's success facilitating the Nile Basin Initiative suggests they have skills worth replicating in other basins.

2. **Be willing to support a *long* process that might not produce quick or easily measurable results**. Sweden's 20-year commitment to Africa's Great Lakes region is a model to emulate. Typical project cycles—often governed by shifting government administrations or political trends—are not long enough.

3. **Ensure that the riparians themselves drive the process**. Riparian nations require funders and facilitators who do not dominate the process and claim all the glory. Strengthening less powerful riparians' negotiating skills can help prevent disputes, as can strengthening the capacity of excluded, marginalized, or weaker groups to articulate their interests.

4. **Strengthen water resource management**. Capacity building—to generate and analyze data, develop sustainable water management plans, use conflict resolution techniques, or encourage stakeholder participation—should target water management institutions, local nongovernmental organizations, water users' associations, and religious groups.

5. **Balance the benefits of closed-door, high-level negotiations with the benefits of including all stakeholders—NGOs, farmers, indigenous groups—throughout the process**. Preventing severe conflicts requires informing or explicitly consulting all relevant stakeholders before making management decisions. Without such extensive and regular public participation, stakeholders might reject projects out of hand.

Water management is, by definition, conflict management. For all the 21st century wizardry—dynamic modeling, remote sensing, geographic information systems, desalination, biotechnology, or demand management—and the new-found concern with globalization and privatization, the crux of water disputes is still little more than opening a diversion gate or garbage floating downstream. Obviously, there are no guarantees that the future will look like the past; water and conflict are undergoing slow but steady changes. An unprecedented number of people lack access to a safe, stable supply of water. Two to five million people die each year from water-related illness. Water use is shifting to less-traditional sources such as deep fossil aquifers and wastewater reclamation. Conflict, too, is becoming less traditional, driven increasingly by internal or local pressures or, more subtly, by poverty and instability. These changes suggest that tomorrow's water disputes may look very different from today's.

No matter what the future holds, we do not need violent conflict to prove water is a matter of life and death. Water—being international, indispensable, and emotional—can serve as a cornerstone for confidence building and a potential entry point for peace. More research could help identify exactly how water best contributes to cooperation. With this, cooperative water resources management could be used more effectively to head off conflict and to support sustainable peace among nations.

BIOGRAPHIES

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Woodrow Wilson International Center for Scholars

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Navigating Peace
www.wilsoncenter.org/water

THE CHALLENGES OF GROUNDWATER IN SOUTHERN AFRICA

By Anthony Turton, Marian Patrick, Jude Cobbing, and Frédéric Julien

(Photo © Kirk Emerson)

It is impossible to understand the developmental constraints of Africa without grasping the significance of water resources, particularly groundwater. Southern Africa[1] faces potentially severe groundwater shortages, which not only imperil the lives of those directly dependent on it, but also the continued development of the economic engines of the region—South Africa, Botswana, and Namibia—all of which face significant constraints on their future economic growth due to the insecurity of water supply. In addition, groundwater resources are the foundation of rural water supplies, which sustain livelihoods for the poorest of the poor communities.

Today's best practice in sustainable water management—Integrated Water Resource Management—focuses on river basins as the units of management. However, this overlooks two fundamental realities in southern Africa:

1. Groundwater aquifer systems, while being an integral part of the overall water resource, seldom correspond with the surface water management unit—the river basin; and
2. In almost all cases, groundwater systems are, by their very nature, transboundary.

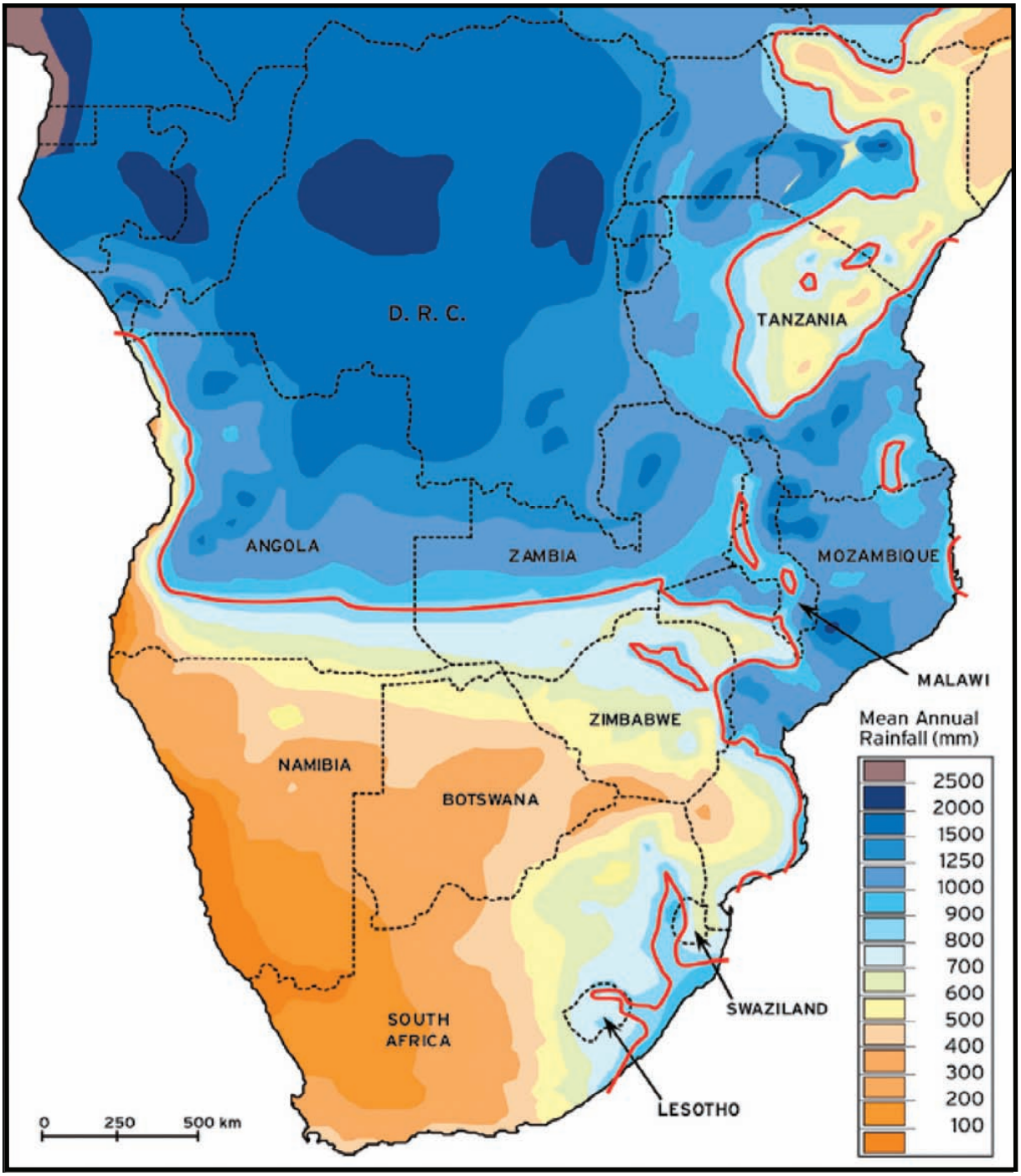
While a complex set of agreements govern transboundary river basins in southern Africa, the region lacks international groundwater treaties of similar sophistication and status, which could be a potential cause of future conflict.

The Groundwater Problem in Southern Africa

Water resource management is almost always transboundary. Water resource management in Africa is, like the continent itself, a product of its colonial past. The colonial powers divided the continent into units that tended to be defined by rivers. Within the 53 African countries, 63 river basins cross international borders. Thus, there are more transboundary river basins than sovereign states. These river basins cover two-thirds of the continent's surface area, in which three-quarters of the human population lives, accounting collectively for a staggering

1. Here, southern Africa is defined as the continental countries that are members of the Southern African Development Community (SADC); see http://www.sadc.int

Map 1: Precipitation in Southern Africa



Note: Precipitation in southern Africa is unevenly distributed, with the four most economically developed countries—South Africa, Namibia, Botswana, and Zimbabwe—on the "wrong" side of the global annual average of 860 mm, shown as a red line. Map courtesy of Peter Ashton.

93 percent of all surface water. And significantly, there are more transboundary aquifers in southern Africa than there are transboundary river basins.

Water is unevenly distributed in both space and time. The four most economically developed countries in the region—South Africa, Namibia, Botswana, and Zimbabwe—are all on the "wrong" side of the global average annual rainfall (see Map 1). Their future economic growth is potentially limited by the insecurity of water supply.

Southern Africa has an inherently low conversion rate of rainfall to runoff, which affects both surface water river flows and groundwater recharge. Of the rainfall that falls to earth in an average year, only a small portion is converted to water flowing in rivers. Southern Africa, along with Australia, has the lowest conversion of rainfall to runoff in the world. Groundwater recharge is also largely dependent on rainfall, but in a nonlinear fashion: Below the critical threshold of 500 mm of mean annual rainfall, a dramatic drop-off in recharge occurs. Therefore, recharge is generally low in southern Africa. Drought-proofing Africa requires a major investment in infrastructure to store the limited streamflow and assure the supply level necessary to provide a stable foundation for a modern industrial economy.

Given the nonlinear nature of groundwater recharge at low levels of rainfall, coupled with the prediction of a hotter and drier future due to global climate change, a reduction in aquifer recharge is a real likelihood. Looking at the scenario considered most likely by mainstream climate change scientists in Africa, southern Africa is the one part of the planet that is expected to become both warmer and drier by 2050.[2] If one accepts this prediction, the groundwater situation in southern Africa is likely to become much worse, with considerable reduction in recharge and hence, an increase in vulnerability of the poor.

Policy Recommendations

- Although the river basin is the generally accepted unit of management, we must recognize that aquifer systems do not coincide neatly with river basins. Therefore, we need policy-related research on groundwater to assist decision-makers with the management of this complex resource. In addition, we call for support of the Alicante Declaration, which seeks to establish a framework for groundwater management.[3]

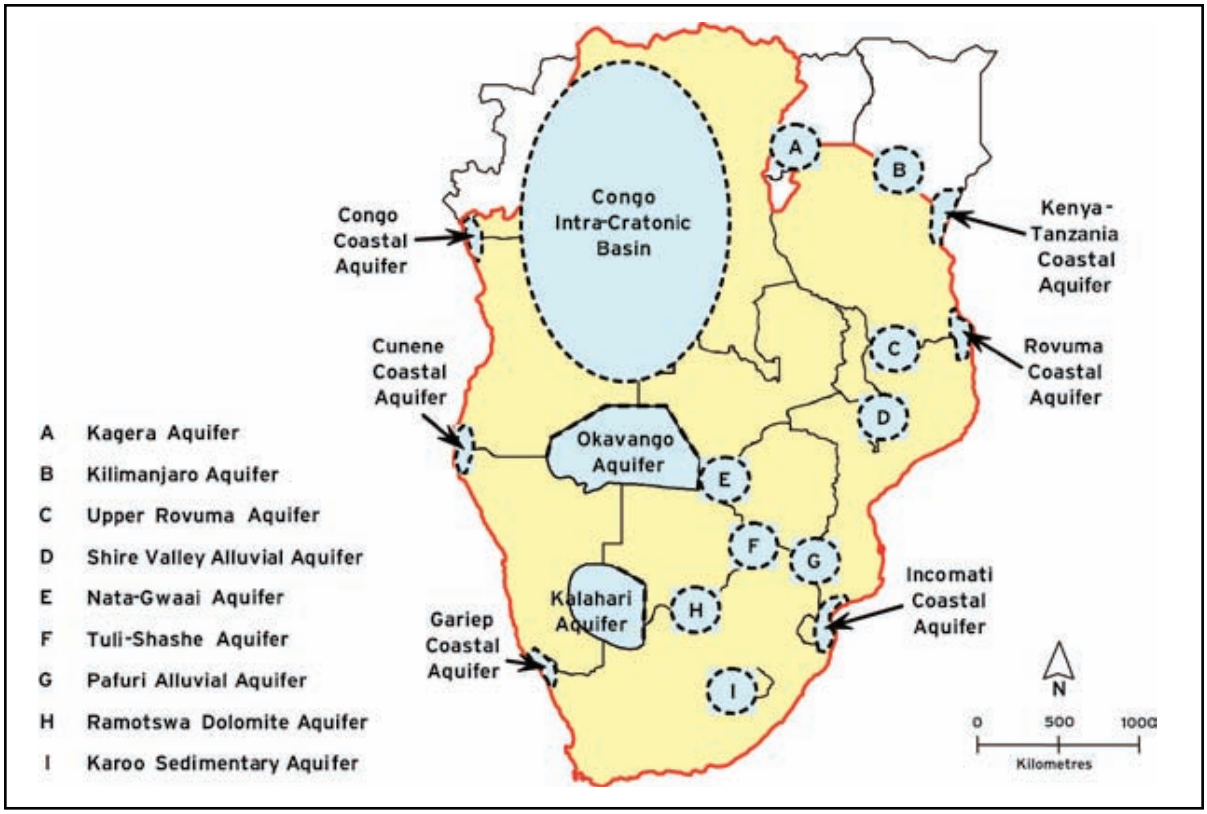
- Groundwater is almost always transboundary in nature. Aquifers crossing international political borders pose different problems than river basins. While the Southern African Development Community (SADC) is characterized by a relatively sophisticated set of surface water agreements, it conspicuously lacks agreements dealing specifically with groundwater. The region needs to: (a) more accurately map transboundary groundwater resources (see Map 2 and table); (b) classify such resources in terms of hydrogeological characteristics and future demands; and (c) generate management regimes that are capable of dealing with the problems associated with the resources' specific hydrogeological characteristics.

- Poverty eradication initiatives such as the Millennium Development Goals cannot be successful without recognizing the links between development, water resource management, aand global climate change. We must generate consensus on

2. The HADCM3 Global Climate Change model using the IPCC SRES A2 Scenario predicts a hotter and drier southern Africa by 2050; see Scholes, Robert J., & R. Biggs. (2004). *Ecosystem services in southern Africa: A regional assessment.* Pretoria, South Africa: Council for Scientific and Industrial Research.

3. See http://www.worldwatercouncil.org/fileadmin/wwc/World_Water_Forum/WWF4/declarations/Alicante_Declaration.doc

Map 2: Some Transboundary Aquifer Systems in Southern Africa



Note: Map redrawn and modified from "Water and Security in Sub-Saharan Africa: Emerging Concepts and Their Implications for Effective Water Resource Management in the Southern African Region," by Peter J. Ashton and Anthony R. Turton, 2008, in Hans G. Brauch et al. (Eds.), *Globalisation and Environmental Challenges*. Berlin: Springer Verlag. Adapted with permission of the author.

the need to reach agreement on carbon emission targets, and we call upon SADC, Brazil, India, and China (as rapidly industrializing nations) to cooperate in negotiations to this end.

If we are serious about poverty eradication in southern Africa, then we must be acutely aware of the link between transboundary water resource management and changing patterns of resource use. In almost all cases, significant resources—both surface and groundwater—are transboundary in nature. The four most economically developed countries in the region are all approaching limitations on future economic growth and development due to low assurance of water supply. The region's countries share a number of transboundary water resources and all have a vested interest in reaching agreement on their management in a fair, equitable, and peaceful fashion.

Table: Known Transboundary Aquifer Systems by SADC Countries

Aquifer / Riparian State	Cunene Coastal	Cuvelai	Congo Coastal	Congo Intra-Cratonic	Gariep Coastal	Incomati Coastal	Kagera	Kalahari	Karoo Sedimentary	Kenya-Tanzania Coastal	Kilimanjaro	Limpopo Granulite-Gneiss Belt	Nata-Gwaai	Okavango	Okavango-Epukiro	Pafuri Alluvial	Pomfret-Vergelegen Dolomitic	Ramotswa Dolomite	Rovuma Coastal	Shire Valley Alluvial	Tuli-Shashe	Upper Rovuma	*shared aquifers*
Angola	X	X	X	X										X									
Botswana								X				X	X	X	X		X	X			X		8
Congo (DRC)			X	X																			2
Lesotho									X														
Madagascar																							0
Malawi																				X			1
Mauritius																							0
Mozambique						X													X	X		X	5
Namibia	X	X			X			X						X	X								6
South Africa					X	X		X	X			X				X	X	X			X		9
Swaziland						X																	1
Tanzania											X											X	5
Zambia				X										X									
Zimbabwe												X	X			X							4
states sharing	2	2	2	3	2	3	1	3	2	1	1	3	3	4	2	3	2	2	2	2	3	2	

Note: Table adapted from "Unpacking Groundwater Governance Through the Lens of a Trialogue: A Southern African Case Study" by Anthony R. Turton, Linda Godfrey, Frédéric Julien, & Julian Hattingh, 2006, January. Paper presented at the International Symposium on Groundwater Sustainability, University of Alicante and the Spanish Royal Academy of Sciences, Alicante, Spain. Adapted with permission of the author.

BIOGRAPHIES

Anthony Turton is director of TouchStone Resources and executive director of the International Water Resource Association. **Marian Patrick** is a researcher at the Council for Scientific and Industrial Research. **Jude Cobbing** is a hydrogeologist at Water Geosciences Consulting. **Frédéric Julien** is a Canadian intern working for the CSIR Water Resource Governance Research Group.

Woodrow Wilson International Center for Scholars

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Navigating Peace

www.wilsoncenter.org/water

THE NEW FACE OF WATER CONFLICT

By Ken Conca

Amid the talk of looming "water wars," a less dramatic—but more immediate—link between water and violence is often ignored: the violence engendered by poor governance of water resources. Policies to expand water supplies, develop hydroelectric power, alter freshwater ecosystems, or change the terms of access to water can have devastating impacts on the livelihoods, cultures, and human rights of local communities. As these communities learn to voice their grievances, build networks across borders, and connect with human rights and environmental activists, once-local conflicts become international disputes. As a result, policymakers at all levels are being forced to rethink water's role in development. To ensure water security in the 21st century, social conflicts over water must be managed in ways that accommodate the full range of people affected by water development projects.

Social Conflicts Over Water

Social conflicts over water are, to some extent, inevitable, given water's multiple functions: It is a basic human need, the foundation of livelihoods, the lifeblood of critical ecosystems, a cultural symbol, and a marketable commodity. Managing social conflict is central to good water management. However, as the development of water resources and the transformation of freshwater ecosystems have intensified, so have the conflicts.

Social conflicts around water are not only increasing, but also being transformed by two simultaneous global revolutions. The communications revolution has produced an explosion in global networks, access to information, and personal mobility, making it easier for affected communities and sympathetic advocacy groups to partner with those in other countries. The democratic revolution has increased the ability of people in previously closed societies to organize and express dissent, making it easier (though not always easy) for communities to oppose projects or policies that harm their interests, livelihoods, and cultures. As a result of these two revolutions, conflicts that were once largely local matters have been dragged into international arenas.

Capital-intensive water infrastructure projects—such as large dams, irrigation schemes, and transportation canals—are the focus of some of these conflicts. The affected communities are typically rural and poor, and frequently home to cultural minorities or otherwise disempowered groups. The World Commission on Dams estimated in its 2000 report that such projects have forced some 40-80 million people to relocate—many without adequate compensation and most with little or no say in the process. Project sites have been the scene of many violent confrontations between communities and governments; in addition, project supporters have targeted local activists for violence.

Changes in **community access to water supplies** can also generate social conflict. The increasing difficulty of financing water-supply infrastructure, as well as pressure from international financial institutions, has led some governments to contract out water services to the private sector. Many more are "marketizing" water by increasing prices, cutting off service for nonpayment, or otherwise limiting access to water. In Cochabamba, Bolivia, in 2000, large protests against price increases and concessions given to a private multinational consortium led the government to declare a state of emergency and deploy the army; at least one person died and more than 100 were injured in clashes with security forces. Similar protests (on a lesser scale) have broken out in many countries, recently claiming lives in China, India, Pakistan, Colombia, Kenya, and Somalia.

Finally, **impacts on critical socio-ecological systems** that provide environmental services and sustain local livelihoods can trigger conflict. Aquaculture, for example, is an increasingly important source of food around the world, as well as a popular development strategy in many tropical coastal regions. Yet industrial-scale fish farming, particularly for shrimp, often has a severe impact on local communities: it can lead to water pollution, wastewater dumping, eutrophication, saltwater intrusion, mangrove deforestation, and the privatization of traditionally community-owned resources. These problems have spurred affected communities to protest, call for boycotts, and take other direct actions, to which some governments have responded by using coercive force and targeting local activists.

We must address these social conflicts over water because human rights and environmental justice are intrinsically important, particularly for people who are marginalized by current economic structures and development initiatives. In addition, the broad legitimacy needed to institute reform will not be obtained without better ways to resolve conflict, increase participation by members of affected communities, and encourage stakeholder dialogue—especially important now, when many countries are redesigning water laws, policies, and practices to emphasize conservation, environmental protection, efficient resource use, and integrated water resources management. Above all, we should view systematic and repeated protests as evidence that policies have failed—an early warning that must not be ignored in the rush to implement particular notions of development.

Policy Recommendations

- **Strengthen the human right to water.** The UN Committee on Economic, Social, and Cultural Rights has recognized the human right to water, including the obligation of states to respect, protect, and fulfill water rights. The human right to water is also implicit in rights to food, survival, and an adequate standard of living, and in peoples' right to manage their own

resources. The challenge is giving these rights concrete—rather than theoretical—meaning. To achieve this goal, we should recognize the right to water in national framework laws and international development assistance practices; create better mechanisms to hold both state and nonstate actors accountable for implementing and complying with existing laws and policies; and ensure that economic reforms are implemented within a human rights framework.

• **Treat water projects as a means, not an end**. Too often, development agencies treat projects as an end rather than a means, and thus fail to assess the full range of alternatives. Worsening this problem are competition between donor agencies, corruption, and the practice of subsidizing dubious projects through export credit agencies. Donor agencies and host governments alike must improve their ability to survey all the options and choose those with the fewest negative impacts. In addition, they should remember that their ultimate aims are reducing poverty, meeting basic needs, and increasing human security, not simply reproducing familiar projects and continuing business as usual.

• **Create better ways to resolve environmental disputes**. The lack of effective mechanisms for resolving environmental disputes is perhaps the weakest link in the chain of global environmental governance. While useful, current mechanisms—such as the Permanent Court of Arbitration, the World Bank's inspection panel, or the World Trade Organization's dispute resolution procedures—fail to provide effective, inclusive, and dispute-transforming outcomes consistently. The UN's High-Level Panel on System-Wide Coherence in the Areas of Development, Humanitarian Assistance, and Environment is currently considering a wide range of reforms. Its recommendations should include establishing a mechanism for arbitrating, resolving, and transforming disputes that involve not only governments, but also intergovernmental organizations, transnational business, NGOs, and local communities.

• **Learn lessons from transnational stakeholder dialogue initiatives**. As traditional interstate institutions have proved unable to manage cross-border conflicts over water and other resources effectively, broader and more inclusive "stakeholder dialogues" have begun to emerge, such as the World Commission on Dams. These initiatives are not a panacea, however. In addition, there is no easy way to identify all the stakeholders in a given dispute. Yet these efforts raise the bar by giving affected people a voice. In addition, they offer important lessons on how to build global consensus: Recognize and work through difficult disagreements rather than seek "least-common-denominator" statements of general principles; cooperatively build knowledge through open, participatory processes; and support such "global" dialogues with robust national stakeholder forums.

• **Broaden participation in international river agreements.** Internationally shared river basins are often the subject of international diplomacy. Too often, however, this diplomacy is limited to dividing water supplies equitably between nations and reducing the potential for international conflict. Although these goals are important, they do little to address the human security of people living in the basin. Few international river basin agreements or the institutions they create include robust mechanisms for incorporating civil society. Without broad participation and a focus on human security, the rush to promote interna-

tional cooperation—often driven by proposed large-scale water infrastructure projects—may simply accelerate exploitation of water resources.

• **Recognize the global demands that drive local resource pressures.** Social conflicts over water often arise at a local level, on the scale of a city or a watershed. Yet they may be driven by powerful external forces. The growth of industrial fish farming is fueled by changing consumer tastes in rich countries. Big hydroelectric projects in remote locations often power industrial processing facilities that plug into the global economy, while bypassing local economies and imposing a heavy burden on local communities. Local initiatives to improve water governance must be supported by mechanisms that connect the dots between global drivers and local impacts, such as product certification, consumer information campaigns, and "cradle-to-grave" accountability.

• **Do not sacrifice water rights to meet climate change goals.** As pressure mounts to respond to the threat of global climate change, poorly conceived hydroelectric projects may be pushed through as "clean" development projects. Hydroelectricity has its place in the world's energy-supply mix. But climate change will also affect stream flow and local water cycles—problems that can be dramatically worsened by some water-infrastructure projects. Rushing to replace "big fossil" with "big hydro" risks increasing the substantial water burdens confronting local communities in a greenhouse world.

BIOGRAPHY

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WATER, CONFLICT, AND COOPERATION: LESSONS FROM THE NILE RIVER BASIN

By Patricia Kameri-Mbote

In 1979, Egyptian President Anwar Sadat said: "The only matter that could take Egypt to war again is water." In 1988, then-Egyptian Foreign Minister Boutros Boutros-Ghali, who later became the United Nations' Secretary-General, predicted that the next war in the Middle East would be fought over the waters of the Nile, not politics. Rather than accept these frightening predictions, we must examine them within the context of the Nile River basin and the relationships forged among the states that share its waters.

The Nile River Basin

Ten countries share the basin of the Nile, arguably the world's longest river: Burundi, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, Uganda, and the Democratic Republic of the Congo (see map). The basin's three million square kilometers cover about 10 percent of the African continent. Approximately 160 million people depend on the Nile River for their livelihoods, and about 300 million people live within the 10 basin countries. Within the next 25 years, the region's population is expected to double, adding to the demand for water, which is already exacerbated by the growth of the region's industries and agriculture. The constant threat of droughts increases the urgency of the problem, and pollution from land-use activities affects downstream water quality. Finally, except for Kenya and Egypt, all of the basin countries are among the world's 50 poorest nations, making their populations even more vulnerable to famine and disease.

Egypt and Sudan hold absolute rights to use 100 percent of the river's water under agreements reached in 1929 between Egypt and Britain (which was then the colonial power in Kenya, Sudan, Tanzania, and Uganda) and in 1959 between Egypt and Sudan.

The Nile River Basin

Source: Printing, Graphics and Map Design Unit, The World Bank

Since Egypt must consent to other nations' use of the Nile's water, most of the other basin countries have not developed projects that use it extensively. Not surprisingly, over the years other basin countries have contested the validity of these treaties and demanded their revocation to make way for a more equitable system of management.

Conflict and Cooperation in the Nile River Basin

Conflict over the Nile's waters could fan existing conflicts in the Greater Horn of Africa, making them more complex and harder to address. Tensions in the Greater Horn of Africa are of great concern to the international community, due to its volatility and proximity to the Middle East. Conflicts emerging here might spread political, social, and economic instability into the surrounding areas. In a river basin, conflict is most likely to emerge when the downstream nation is militarily stronger than nations upstream, and the downstream nation believes its interests in the shared water resource are threatened by actions of the upstream nations. In the Nile basin, the downstream nation, Egypt, controls the region's most powerful military, and fears that its upstream neighbors will reduce its water supply by constructing dams without its consent.

Despite this gloomy scenario, interstate war is unlikely, according to history: No nations have gone to war specifically over water resources for thousands of years. Instances of cooperation between riparian nations outnumbered conflicts by more than 2-to-1 between 1945 and 1999.[1] Instead of war, water fuels greater interdependence. By coming together to jointly manage their shared water resources, countries build trust and prevent conflict. In the face of potential conflict and regional instability, the Nile basin countries continue to seek cooperative solutions.

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The political will to develop a new legal framework for managing the Nile should continue. In principle, the countries of the Nile River basin agree that the situation should change. However, they do not agree on how. To help reach a consensus, they developed the high-level Nile Basin Initiative (NBI) in 1999. Originally designed as a way to share scientific information, the NBI today brings together ministers from the basin countries "to achieve sustainable socio-economic development through equitable utilization of, and benefit from, the common Nile basin water resources," as stated in its shared vision.[2] The NBI has served as a catalyst for cooperation in the search for a new legal framework for the management of the Nile.

However, high-level negotiations like the NBI are not enough; civil society must be involved. Since the inhabitants of a river basin play critical roles in the success of any international agreement, interstate nego-

tiations should also include stakeholders beyond the national governments. Civil society engagement and participation in the development of the Nile basin have been facilitated not only through the NBI's Civil Society Stakeholder Initiative but also through the Nile Basin Discourse (NBD). The NBD's National Discourse Forums, established in each of the basin countries, provide a venue for all the Nile's users to air their expectations and grievances. Through these forums, stakeholders can provide input into development projects along the river basin. The NBD involves a broader array of stakeholders than the traditional state representatives, thus allowing users at the lowest levels—including farmers, women's groups, fishers, and existing community-based organizations—to participate in the development of a legal framework.

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Policy Recommendations

- **Recognize that environmental resources such as water can be pathways to peace.** While people will likely fight with their neighbors over water, nations have not, historically preferring cooperation over conflict.

- **Use water diplomacy to build sustainable development, democracy, and equality**. Water management schemes must promote equitable use for current and future users, increase access, share benefits, and encourage broad participation.

- **Engage non-state actors (such as farmers, fishers, women's groups, and community-based organizations) in finding cooperative solutions to potential water conflicts**.

- **Develop the capacity of civil society groups to ensure they can meaningfully contribute to basin-wide initiatives**. Such capacity building will bridge the endowment gap between civil society and government. It will also enable local users to demand access to benefits governed by interstate agreements while continuing to "buy in" to basin-wide initiatives, reducing the chances of conflict.

- **Coordinate the efforts of bilateral and multilateral funding institutions operating in the basin to realize synergies and engender cooperation over water.** These institutions include the Canadian International Development Agency (CIDA), the Swedish International Development Cooperation Agency (SIDA), and the United Kingdom's Department for International Development (DFID), as well as the World Bank.

Basin states are interdependent and their development is inevitably linked to the river's hydrologic cycle. Coordinated management of the waters of the Nile is beginning to create synergy in different countries and sectors, and contribute to overall cooperation. The Nile basin countries could resolve conflicts by planning and

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managing water resources jointly to achieve sustainable development and regional stability, under a sound legal and institutional framework agreed to by all parties. Reaching this agreement will require involving all stakeholders in transboundary water management, building trust among them, creating a common bond, and identifying shared interests.

Collaborative management of the Nile's water resources could act as a catalyst for peace in a region beset by conflict. If we deal effectively with shared water, we could help mitigate not only the daily struggle for life, but also the deadly battles that threaten to pit tribe against tribe, clan against clan, family against family, and neighbor against neighbor.

NOTES

1. Wolf, Aaron, Shira Yoffe, & Marc Giordano. (2003). "International waters: Identifying basins at risk." *Water Policy* 5(1), 31-62. See also Navigating Peace No. 1, "Water can be a pathway to peace, not war," available at http://www.wilsoncenter.org/water

2. See http://www.nilebasin.org for more information and a list of members and partners.

BIOGRAPHY

Patricia Kameri-Mbote is a professor of law at Strathmore University (Nairobi) and an advocate of the High Court of Kenya. She is also programme director for the International Environmental Law Research Centre. Previously, she chaired the University of Nairobi's Department of Private Law and served as acting dean for the Faculty of Law. She was the first chair of the Kenya Nile Discourse Forum, a network of civil society organizations working with other national discourse forums in the Nile River basin to influence development of projects and programs under the Nile Basin Initiative (NBI) and other Nile-related programs. She was an Open Society Institute Africa Policy Scholar at the Woodrow Wilson Center in 2006.