



# WATER AND CONFLICT

INCORPORATING PEACEBUILDING INTO WATER DEVELOPMENT

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© 2009 Catholic Relief Services—United States Conference of Catholic Bishops.  
Published 2009.

ISBN 0-945356-53-6

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Graphic design by Judi Jachman

Front cover: Women and girls fetch water in the Hassahissa IDP Camp near Zalingei, Sudan, 2005.  
Photo by Paul Jeffrey/ACT-Caritas.

Back cover: Drinking from a new village water system, Siran Valley near Mansehra, Northwest Frontier Province, Pakistan, 2006. Photo by Jim Stipe/CRS.

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# INTRODUCTION

## PURPOSE, AUDIENCE, AND OVERVIEW

Water is a vital resource. Not only a font of life, it often helps to bring people together. But access to water is highly unequal between and within countries. Much of the world's population lives in places where demand for water exceeds supply, or poor quality limits its use. Scarcity of water and inequities in access, use, and decision-making can threaten life itself, diminish the quality of life, and impede integral human development. Water scarcity and inequities are also risk factors for violent conflict. Water-related violence is already common in many parts of the world and is generally expected to increase in the years ahead.

This document is intended to assist water development practitioners, civil society peacebuilders, and human rights advocates as they seek to integrate water and peacebuilding into their project programming. The purpose is essentially two-fold:

- Informative—to provide a conceptual framework for the major issues and dynamics.
- Programmatic—to provide practical guidance and tools for action.

The text distills much of the extensive water, conflict, and cooperation material produced by researchers and development practitioners in the field to date, and presents it in the following sequence:

- Current global water situation.
- Concepts of conflict, violence, conflict transformation, and cooperation as applied to water.
- Manifestations of water-related conflict, as well as historical perspectives and future trends at the international and intranational levels.
- Underlying causes of water-related conflict, broken down into socio-economic, institutional/political, and environmental factors.
- Peacebuilding principles for program design, rooted in CRS values, Catholic social teaching, U.N. Declarations on the Human Right to Water, and International Humanitarian Law in situations of warfare, including the Geneva Convention.
- Points for reflection, including a brief review of ethical obligations related to the challenging field of water and peacebuilding.
- A discussion of peacebuilding perspectives guiding water development strategies, water-related conflict transformation tools, and recommended steps for dealing with specific water-related conflict scenarios.

Throughout the document, case studies and reflections are included to keep theory grounded in the reality in which international water development practitioners, human rights advocates, and peacebuilders are working.

“Too often, where we need water, we find guns instead.”

*Ban Ki-Moon 2008*



Photo by Anna Husariska/IRC, 2007. Reprinted with permission.

*Clashes between insurgents and government forces forced many Somalis to flee their homes. A dry tapstand provides no solace to this thirsty refugee child in Somalia's Mudug Province.*

## KEY TERMS

**Improved Water Source:** Water services provided through household connections, public standpipes, boreholes, protected wells or springs, and rainwater collection. (World Health Organization (WHO), United Nations Children's Fund (UNICEF))

**Access to an Improved Water Source:** The ability to obtain at least 20 liters per person per day from an "improved" source that is within one kilometer of the user's dwelling. (WHO, UNICEF)

**Water Stress:** A situation in which the demand for water exceeds the available amount during a certain period or in which poor quality restricts its use. (European Environmental Agency) Countries or populations having between 1,000 and 1,700 m<sup>3</sup> of renewable water resources per person per year for all uses are considered water-stressed. (UN Environment Programme (UNEP))

**Water Scarcity:** A condition characterized by insufficient water resources to satisfy the average, long-term total demand requirements by all sectors, including the environment. (European Environmental Agency) Countries or populations having less than 1,000 m<sup>3</sup> of renewable water resources per person per year for all uses are considered to be water-scarce. (UNEP)

**Water Security:** The ability of a country or population to access sufficient quantities of improved water to maintain adequate standards of food and goods production, sanitation, and health. (Hoffman, 2004) "Water insecurity" is the lack of same.

**Virtual Water:** The amount of water consumed in the production process for a given quantity of food or other products. (World Water Council)

**Tension:** A strained relationship between individuals, groups, nations, etc. (*Random House Dictionary*)

**Conflict:** A social situation in which a minimum of two actors or parties strive to acquire at the same moment an available set of scarce resources. (Wallensteen, 2002) Conflicts are an unavoidable part of social change in all societies.

**Conflict "Transformation":** A step beyond negotiated conflict "resolution" in which the parties to the conflict, their relationships to each other, and the structural elements that underlie the conflict are non-violently "transformed." (See discussion of Neufeldt, et al, below.)

**Water-Related Conflict:** Conflicts arising between two or more parties holding competing claims over a water resource, its allocation, or its use. (OECD DAC, 2005)

**Violent Conflict:** A dispute between a minimum of two or more parties in which physical force is exerted for the purpose of inflicting injury or damage upon one's adversaries. Such a conflict may or may not involve weapons. (*American Heritage Dictionary*)

**War:** A state of open, armed, often prolonged conflict carried on between nations, states, or parties. (*American Heritage Dictionary*)

**Peacebuilding:** CRS defines this term as a process of changing unjust social and political structures through "right relationships." The process transforms the way in which people, communities, and societies live, heal, and structure their relationships and creates a space in which mutual trust, respect, and interdependence can grow.

## WATER RESOURCES: A GLOBAL PERSPECTIVE

Water is vital for sustaining the life of each person, for sustaining health and socio-economic well-being, and for making possible the very existence of life on our planet. The total amount of water on Planet Earth is fixed. Of the world's water, only 2.5% is freshwater (i.e., not salty), most of which is locked up in glaciers or deep underground. The entire body of freshwater found in lakes and rivers makes up only 0.01% of the planet's total 1.4 billion cubic kilometers of water (Gleick, 2006). With the human population at 6.5 billion and climbing, the per capita quantity of freshwater continues to decline. Yet the principal problem continues to be man-made: the inequitable access to and distribution of freshwater, which is highly variable between and within countries.

Nearly one billion people lack access to improved water. Approximately 2.5 billion people have no adequate access to improved sanitation facilities, i.e., piped sewers, septic tanks, latrines. About 80% of people with poor access to water and sanitation live in rural areas. Every year, 2.1 million people—mainly children—die due to illnesses related to dirty water, poor sanitation, and poor hygiene.

Approximately one third of the world's population lives in water-stressed countries, primarily in Asia and Africa. By 2025, the proportion of the world's population living in water-stressed countries is set to increase to two-thirds. Accordingly, water-related conflicts are expected to intensify in such areas. Absolute water scarcity already affects more than 500 million people in more than 30 countries. The role of water scarcity in creating preconditions of discontent and desperation—precursors to violent conflict—is widely acknowledged (S. Postel and A. Wolf, 2001).

Global water use almost tripled in the second half of the 20th century, increasing much faster than the world's population in that same time period. Water resources are used for a variety of human activities, broadly divided between agriculture (70%), industry (22%) and domestic use (8%). These often-competing uses of freshwater frequently cause conflict.

## CONFLICT TRANSFORMATION AND COOPERATION

Recognizing that conflicts are an unavoidable part of social change in all societies, the peacebuilder aims not to prevent conflicts per se, but rather to transform them and avert violence. Before delving deeper into conflicts associated specifically with water, it might be helpful to consider some characteristics of contemporary conflict in general. Azar's work (1983) points out these elements of protracted contemporary conflict:

- Some form of scarcity
- Real or perceived inequity
- Monopolizing of power by dominant individuals or groups, limiting access to other groups (crisis of legitimacy)
- Regional instability
- Political fragmentation
- Fragile state structures
- Competition for land and/or limited resources, including water
- Ethnic tensions

Conflicts often arise when people are deprived of basic human needs, resulting in demands for improved services or opportunities, including security, recognition, acceptance, fair access to political institutions, and economic participation. In such situations of conflict, violence may or may not be present.



Photo by Karl Grobl/CRS, 2004.

*Komping Pouy Reservoir, Cambodia, between Bavel and Banan districts in Battambang Province. The peaceful surroundings belie its origins: it was dug by forced labor in the mid-1970s. Many lives were lost from overwork, starvation, and execution.*

Tension among competing parties over access to water; its uses, and allocation often leads to outright conflict that can become violent if not adequately addressed. While water is very rarely the single—and seldom the major—cause of conflict between or within nations, it does have the potential to exacerbate existing tensions as well as to impede progress toward resolving already existing broader conflicts.

In 2000, violent water conflicts occurred in Shandong, China, where farmers clashed with police in response to government plans to divert irrigation water to cities and industries. Water conflict also took place that same year in Cochabamba, Bolivia, where violent government repression of tens of thousands of protestors occurred following the privatization of its municipal water services. Indeed, history is full of examples of violent conflicts that have been due, at least in part, to issues of control of and access to water resources. Such incidents may be a prelude to the kinds of tensions that can be expected in the future as water demand outstrips available water resources.

Direct violent conflicts over water are most likely to occur on a local level—where international organizations and their local partners dedicated to water development often have their greatest impact.

In seeking to assist practitioners to establish programs aimed at preventing and mitigating water-related violent conflicts on the ground, we discuss peacebuilding concepts and dispute resolution techniques, with specific examples of their utilization. Wallensteen (2002) notes that the goal is to promote conflict transformation, which he defines as:

*A situation where the conflicting parties enter into an agreement that solves their central incompatibilities, where they accept each other's continued existence as parties, and where they cease all violent action against each other.*

Like conflict transformation, peacebuilding is a “people-centered, relationship-building, and participatory process,” as defined by Caritas Internationalis in its 2002 training manual. Caritas goes on to say,

*Peacebuilding occurs either before a violent conflict erupts (a preventative measure), or after a violent conflict ends (an effort to rebuild a more peaceful society). It may take the form of activities designed to increase tolerance and promote coexistence, or activities may address structural sources of injustice or conflict. . . . Transforming conflict seeks to alter unjust and unequal relationships and social structures in ways that build a more just society. Thus, conflict transformation goes beyond the concept of conflict resolution in that it requires a transformation of the parties, their relationships to each other, and the structural elements that underlie the conflict. (Neufeldt et al., 2002, pp. 14–15)*

# Part I

WATER, CONFLICT, AND COOPERATION

## BACKGROUND

*Men and women of Pucara Pajchani, Bolivia, working together to install their community drinking water system.*

Artist: Eleuterio Chambi Chura of El Alto, Bolivia, 2007.  
Reprinted with permission.





## Lack of Access to Water as “Structural Violence”

The most widespread manifestation of water-related violence is the deprivation of access to improved water and basic sanitation, a situation of “structural violence” affecting hundreds of millions of poor people around the world.

Imagine the death of the entire under-five population of New York City and London together to get a rough sense of the impact of the approximately 1.8 million child deaths occurring each year as a result of diarrhea caused by unclean water and poor sanitation. Death from diarrhea is the second biggest killer of children (15% of all infant deaths), after acute respiratory infections (Foro Nacional de Agua, 2008). While these young deaths are perhaps the most disturbing manifestation of water-related “structural violence,” other manifestations include:

- Illness— at any given time close to half of all people in developing countries suffer from a health problem caused by water and sanitation deficits.
- Lost educational opportunities—443 million school days each year are lost to water-related illness (UNDP, 2006).
- Large-scale productivity losses, not to mention lost opportunities for personal development—In El Salvador, for example, impoverished rural families without access to water in the home spend an average of 8.5% of their productive time just getting water (Foro Nacional de Agua, 2008).

With almost two in every three people without access to clean water surviving on less than \$2 a day, this is a crisis and a brutal violence being faced above all by the world’s poor. Any effort to promote water-related conflict transformation must recognize this reality (UNDP, 2006b).

As demands for water come up against the limits of finite supply, water-related conflicts are bound to rise, especially within nations. That means that even greater efforts must be made to prevent and mitigate conflict. Access to nearby and adequate supplies of improved water for domestic consumption mitigate the “structural” violence inflicted upon those enduring grinding poverty, especially women and children. More time can then be dedicated to productive, income-generating efforts for adults, and educational opportunities for children. As a result, tensions may subside and a renewed sense of communal dignity and cooperation may reign.

“Before [the water well installation], the school would close in the dry season because the children would be collecting water all day.”

*Grace Justin, mother from South Sudan, quoted in P. Martell, 2009*

“About half a million maternal deaths occur each year in developing countries because of pregnancy complications. For example, carrying heavy water pots is a primary cause of pelvic distortion that can lead to death in childbirth.”

*Aureli and Brelet 2004, p. 22*

“We ask for water; they give us [tear] gas!”

*Cochabamba, Bolivia.  
Graffiti during 2000 “Water Revolt”*



*The daily “structural” violence inflicted upon the world’s poor because they lack access to improved water—especially women and children—is represented by this small boy sent out long distances daily to fetch water in Anchallani, Bolivia.*

## Water Conflict on the Local, National, International, and Global Levels

Water conflict occurs on four interdependent levels.

*Local:* between societal groups competing for water in a specific area, or between a state and its citizens in a specific area.

Examples range from tribal tension over access to a water point, to entire communities being displaced by the construction of a dam, to a general population’s response to the poor governance of their water services. At the local level, such tension over water use, its availability, and allocation, can contribute to low-scale violence, which can escalate into instability within states and across subregions. As for tension between citizens and state authorities, initial forms of conflict are frequently manifested in acts of civil disobedience, which may escalate into acts of sabotage and violent protest if adequate participatory decision-making is not achieved. Violent repression by the state in response to citizen protests has not been uncommon.

*National:* between different interest groups in relation to national policies affecting water management.

Examples include hostilities generated by inadequate or even contradictory national regulations governing competing sectors and priorities, from farming to industry, environmental protection to municipal water supplies. Such conflicts stem from a lack of integrated water resources management at the national level. In most cases these conflicts are resolved through courts or political processes. But where governments are weak or corrupt, these conflicts often lead to violence.

*International:* between states over the use of shared water resources.

Examples include tension and threatened hostilities between upstream and downstream states over the use of shared rivers, as well as other transboundary bodies of surface water and underground aquifers. Such tension between countries may hinder sustainable development, indirectly driving poverty, migration, and social instability. It also has the potential to exacerbate other non-water-related violent conflicts.

*Global:* between marginalized and affluent populations, in which conflicts result when resources are distributed from marginalized populations on the periphery to more privileged sectors comprising the core.

For example, conflict arises as global freshwater and land resources dedicated to agricultural production are prioritized by the markets and market-friendly governmental policies. The demands of increasing affluence (e.g. grain-based

biofuels for cars and trucks and water-intensive crops for export) prevail over the basic human needs of impoverished local populations.

## Water as Target, Tool, and/or Goal in Conflicts

The Pacific Institute's database on Water and Conflict classifies the roles of water in conflicts between adversaries (P. Gleick 2008). Table I.1 presents a description and example of each of these roles.



*British Bombing of the Mohne Dam in the Ruhr Valley of Germany during WWII.*

MOHNE. Courtesy of Wikipedia Commons.

| Roles of Water in Conflict    | Description   | Example   |
|-------------------------------|---|---|
| Military Target               | When destruction of a water system/facility is used as an instrument of war.  | 1943: British Royal Air Force bombed dams on the Möhne, Sorpe, and Eder Rivers, Germany. Möhne Dam breach killed 1,200 people and destroyed all downstream dams for 50 km.<br><br>2001: U.S. forces bombed the hydroelectric facility at Kajaki Dam in Afghanistan in order to cut off electricity to the city of Kandahar. |
| Military Tool                 | When control of a water system/facility is used as an instrument of war.  | 1992: Bosnian Serbs took control of water valves regulating flows from wells that provided more than 80% of the water to the besieged city of Sarajevo.   |
| Political Tool                | When control of a water system/facility is used for political gain against one's adversaries.   | 1999: In Puerto Rico, protesters blocked the Blanco River water intake to navy base, following chronic water shortages in neighboring towns—a non-violent conflict.   |
| Source of Development Dispute | When inequitable distribution and use of water resources leads to a degradation of another's source of water.   | 2006: At least 40 people died in Kenya and Ethiopia in continuing clashes over water, livestock, and grazing land.<br><br>2007: In India, thousands of farmers breached security and stormed the area of the Hirakud dam to protest allocation of water to industry.  |
| Means of Terror               | When an individual or organized group employs the unlawful use or threatened use of force or violence against people or property with the intention of intimidating or coercing societies or governments, often for ideological or political reasons. | 2003: In Iraq, a sabotage/bombing of a 6-foot diameter water supply pipeline in Baghdad took place.   |
| Political/Military Goal       | When one country strives to permanently possess or control another nation's water resources.  | 1986: South African troops moved into Angola to take possession and defend the Ruacana hydropower complex.  |

## Historical Perspective and Future Trends

“Simply put, water is a greater pathway to peace than violent conflict in the world’s international river basins.”

*Wolf, Kramer, Carius, and Dabelko 2006*

### Water-Related Conflict between Nations

In 1995, World Bank Vice President Ismail Serageldin warned, “The wars of the next century will be about water!” Despite oft-quoted predictions of impending “water wars” between states, one would, however, have to go back 4,500 years to find the last recorded time that two nations went to full-blown war specifically over water. It occurred between the two Mesopotamian city-states of Lagash and Umma in modern day Southern Iraq (Gleick, 2008).

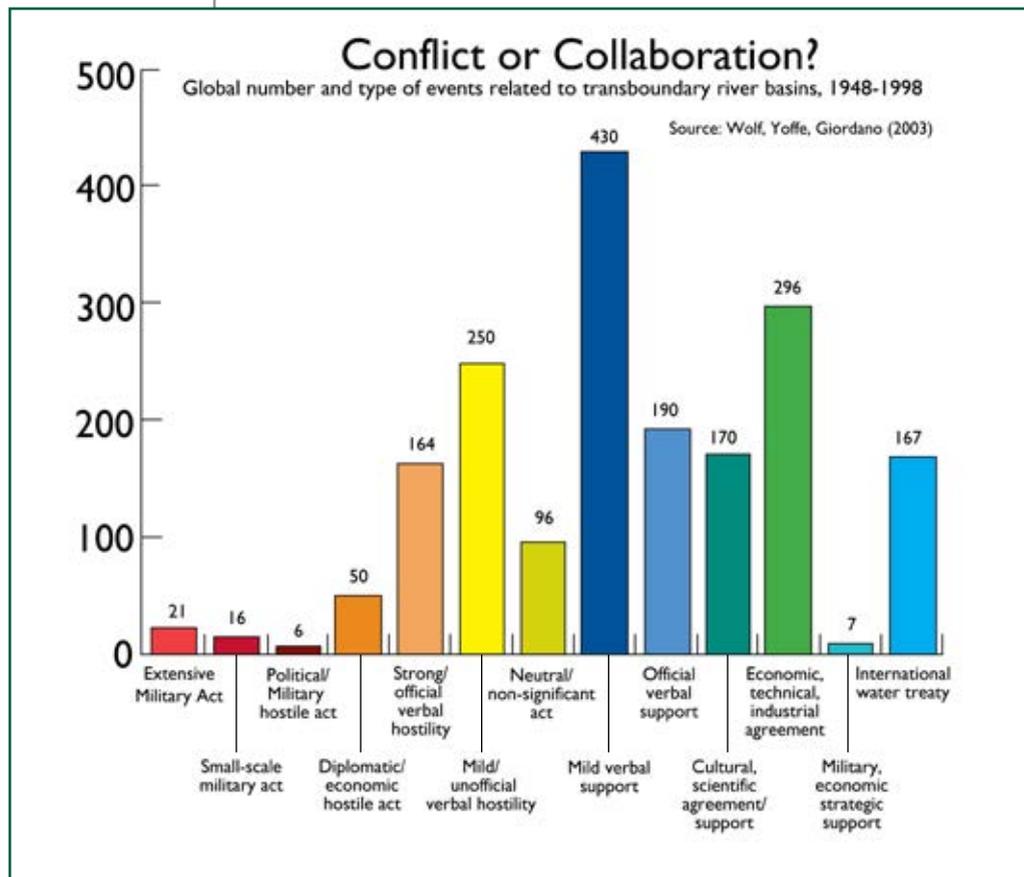


Figure I.1. Transboundary River Basin Events, 1948-1998.  
Source: *Transboundary Freshwater Dispute Database*, Department of Geosciences, Oregon State University, <<http://www.transboundarywaters.orst.edu>>. Reproduced with permission.

Two opposite perceptions of the threat of water-related warfare are widespread. One perception is reflected in the research of Wolf, Yoffe and Giordano (Figure I.1), showing that instances of cooperation between riparian nations within a transboundary river basin—i.e., states situated alongside the bank of a common river or other body of water—have outnumbered conflicts by more than two to one in the second half of the 20th century. Between the years 1805 and 1984, countries signed more than 3,600 water-related treaties (Postel and Wolf, 2001). It appears that because water is so important, nations cannot afford to fight over it. Functioning more as a “connector” than a “divider,” water tends to serve as a catalyst for greater interdependence between nations.

Others, however, argue that in the case of freshwater—given its increasingly scarce nature, coupled with the lack of a substitute for most of its uses—the past is not a reliable guide to the future. Such analysts note that while history suggests that cooperation over water resources has been the norm, it certainly is not the rule. On 37 recorded occasions in the second half of the 20th century alone, countries concerned about water fired shots, blew up a dam, or undertook some form of military action (with 30% of the disputes occurring between Israel and one of its neighbors) (Wolf et al., 2006). Britain’s former defense secretary, John Reid, on the eve of a 2006 summit on climate change, predicted, “Violence and political conflict would become more likely as watersheds turn to deserts, glaciers melt and water supplies are poisoned.” Former British Prime Minister Tony Blair also noted, “Such changes make the emergence of violent conflict more, rather than less, likely” (Barlow, 2008).

Furthermore, water-related conflicts that begin on the local level as a manifestation of internal strife, from sub-Saharan Africa to the Balkans, have the potential to spill over into neighboring countries, causing an internationalization of violent conflict.

Despite serious concerns, the hasty application of “war language” to water conflicts can actually aggravate strife. Carius et al. (2003) note, “Such rhetoric does not easily lead to a program of action for conflict prevention and human development.” Wolf et al. (2006), among others, note the importance of avoiding “media-friendly but historically inaccurate” language about interstate “water wars”:

- The “water wars” angle discourages the engagement of key developmental and environmental partners in favor of military and other security groups.
- Water management offers an avenue for peaceful dialogue between nations, even when combatants are fighting over other issues. . . . Water management builds bridges between nations. . . . Water cooperation forges people-to-people or expert-to-expert connections. . . . A water peacemaking strategy can create shared regional identities and institutionalize cooperation on issues larger than water.

“While rarely (if ever) starting a war between states, water allocation is often a key sticking point in ending conflict and undertaking national and regional reconstruction and development.”

*Carius, Dabelko, and Wolf 2004, 1*

Moving beyond the debate over whether or not there will be future “water wars” between countries, researchers at Oregon State University undertook a two-year study of conflict and cooperation within international river basins (S.Yoffe, 2001). They identified international river basins at risk as those meeting criteria of:

- High population density (>100/sq.km).
- Low per capita GDP (< \$765/person—1998 World Bank lowest income country definition).
- Overall unfriendly relations.
- Politically active minority groups that may lead to internationalization of the conflict.
- Proposed large dams or other water development projects.
- No or only limited freshwater treaties.

The results of their analysis models led them to conclude that the likelihood of conflict in international river basins increases significantly whenever two factors come into play:

- When some large or rapid change occurs in the basin’s physical setting—e.g., the construction of a dam, river diversion, or irrigation scheme—or in its political setting—e.g., the breakup of a nation, resulting in formerly “national” rivers becoming “international.”
- When existing institutions are unable to absorb and effectively manage change in a transboundary river’s physical or political setting. (This is the situation when no treaty, implicit agreement, or cooperative arrangement exists to spell out each nation’s rights and responsibilities with regard to the shared river).

As illustrated in Figure I.2 and listed in Table I.2 (categories 1 and 2), 17 such river basins are ripe for the onset of tensions or conflict in the coming years. They encompass more than 50 nations on five continents, the majority of them in southeast Asia and central and southern Africa. These countries could be spiraling toward transboundary water disputes unless they move quickly to achieve agreements on how to share the rivers that bind them. An additional 15 international river basins (category 3 of Table I.2) have been identified as being potentially at risk in the future, based on the criteria presented above, although they lacked tension in the public arena and media at the time of the study in 2001.

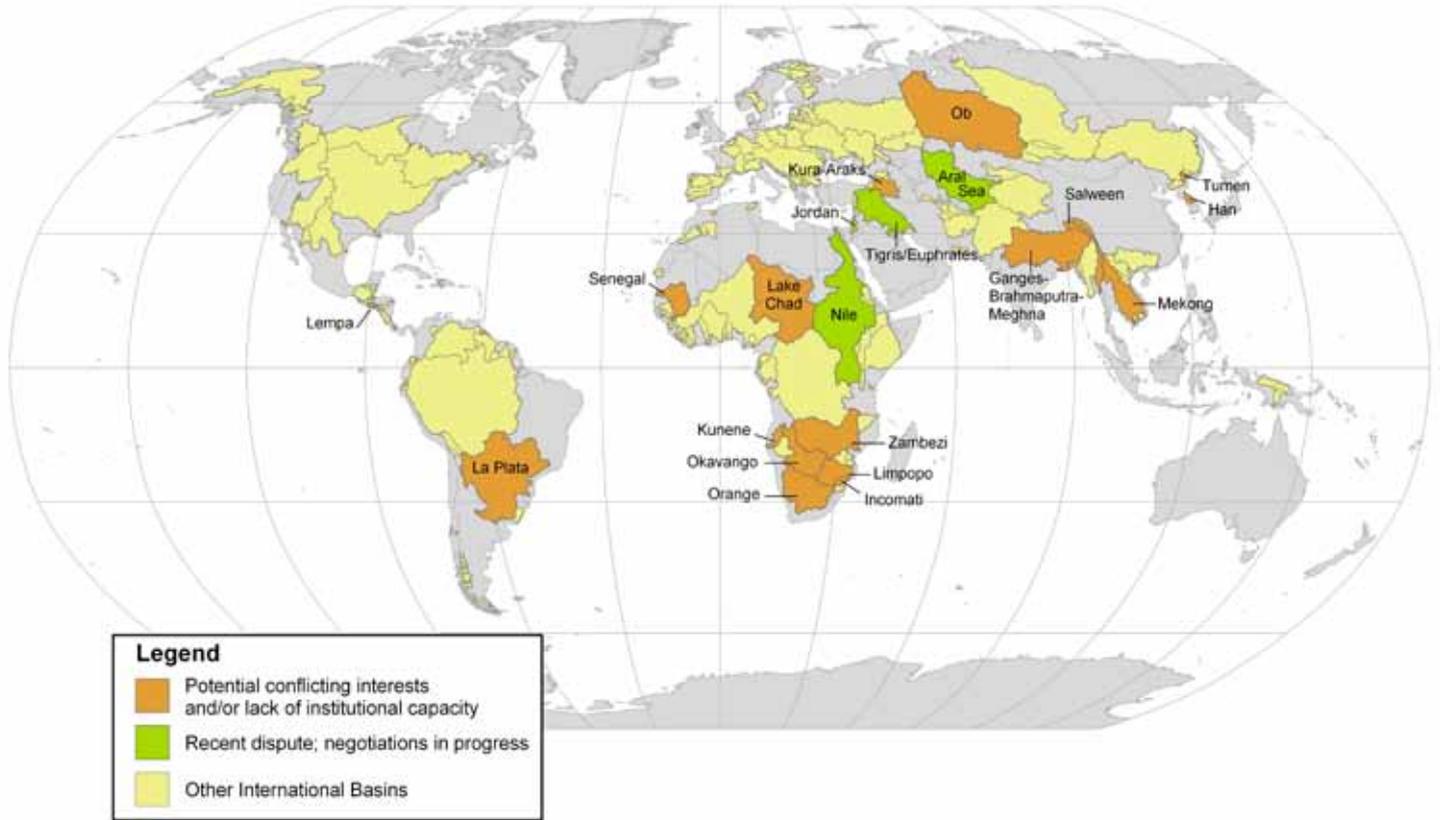


Figure 1.2. International River Basins at Risk of Conflict.

Source: *Transboundary Freshwater Dispute Database*, Department of Geosciences, Oregon State University, <<http://www.transboundarywaters.orst.edu>>. Reproduced with permission.

**Table 1.2.** Summary of Transboundary Water Disputes and Potential for Disputes

*Adapted from Shira B.Yoffe, "Basins at Risk," 2001.*

**CATEGORY 1 – Basins Currently in Dispute/Negotiations**

*"The well known 'hot spots,' where the potential for continued disputes, at least into the immediate future, is considered likely. While each basin has a treaty associated with it, none of those treaties include all of the basin riparians."*

|                  |   |
|------------------|---|
| Aral Sea         | Afghanistan, China, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan            |
| Jordan           | Israel, Jordan, Lebanon, Palestine, Syria   |
| Nile             | Burundi, Congo (Kinshasa), Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, Uganda |
| Tigris-Euphrates | Iran, Iraq, Jordan, Saudi Arabia, Syria, Turkey   |

**CATEGORY 2 – Basins at Risk**

*"Basins in which factors point to the potential for future conflict and in which up-coming development projects or other stresses upon the water system have raised protests among the riparians."*

|                           |   |
|---------------------------|---|
| Asi/Orontes               | Lebanon, Syria, Turkey  |
| Ganges-Brahmaputra-Meghna | Bangladesh, Bhutan, Burma, China, India, Nepal                                  |
| Han                       | North and South Korea   |
| Indus                     | Afghanistan, China, India, Pakistan   |
| Kunene                    | Angola, Namibia   |
| Lake Chad                 | Algeria, Cameroon, Central African Republic, Chad, Libya, Niger, Nigeria, Sudan |
| Mekong                    | Burma, Cambodia, China, Laos, Thailand, Vietnam                                 |
| Okavango                  | Angola, Botswana, Namibia, Zimbabwe   |
| Salween                   | Myanmar; China, Thailand  |
| Senegal                   | Guinea, Mali, Mauritania, Senegal   |

**CATEGORY 3 – Basins Identified as Potentially Being at Risk in the Future**

*"Similar to category 2, in that there is a confluence of factors which indicate the potential for future conflict; however, unlike category 2 basins, there is no evidence of existing tensions in public policy or news fora." (as of 2001)*

|                  |   |
|------------------|---|
| Ca               | Laos, Vietnam   |
| Chiloango        | Angola, Congo (Kinshasa, Brazzaville)   |
| Cross            | Cameroon, Nigeria   |
| Drin             | Albania, Macedonia, Serbia, Montenegro  |
| Irrawaddy        | Burma, China, India   |
| Kura-Araks       | Armenia, Azerbaijan, Georgia, Iran, Turkey  |
| La Plata         | Argentina, Bolivia, Brazil, Paraguay, Uruguay   |
| Limpopo          | Botswana, Mozambique, South Africa, Zimbabwe  |
| Lempa            | El Salvador; Guatemala, Honduras  |
| Ob               | China, Kazakhstan, Russia   |
| Red              | China, Laos, Vietnam  |
| Saigon           | Cambodia, Vietnam   |
| Song Vam Co Dong | Cambodia, Vietnam   |
| Yalu             | China, North Korea  |
| Zambezi          | Angola, Botswana, Congo (Kinshasa), Malawi, Mozambique, Namibia, Tanzania, Zambia, Zimbabwe |

## Water-Related Conflict within Nations

According to Eriksson et al., in 2003, between 1988 and 2004, 80%-90% of armed conflicts have been internal, i.e., within nations. Water scarcity is widely recognized as one of the causes of significant violence and conflict *within nations*. Many disputes erupt in water-stressed countries, especially in the downstream regions of over-tapped river basins. Water stress and scarcity continue to spread as populations increase and withdrawal rates of freshwater resources exceed recharge. Thus, the regions within countries that are vulnerable to water stress are particularly ripe for water-related conflict. Millions of the world's poor, particularly those in rural areas surviving on subsistence farming, depend on water for their livelihoods. Increasing water scarcity, in combination with low economic development and weak governance, are indicators that conflict and instability are likely to increase in frequency. Box I.1 presents a particularly extreme case of this kind of water-scarcity-driven violence.

### Box I.1 **Somalia: Water Well Widows, Warlords, and Warriors**

Excerpts from E. Wax and R. Thomason, "Dying for Water in Somalia's Drought" (2006).

*Villagers of Rabdore, Somalia call it the "War of the Well," a battle that erupted between two clans over control of a watering hole in this dusty, drought-stricken trading town. By the time it ended two years later, 250 men were dead. "We call them the warlords of water" Fatuma Ali Mahmood, 35, said about the armed men who control access to water sources. One day last year, Mahmood's husband went out in search of water. Two days later, he was found dead. He was shot when an angry crowd began fighting over the well, she said. "His body was bloodied, swollen and just lying there with the other dead by the well, left in disgrace. The shame. We'd never seen conflict at this level of violence," she explained, shielding her eyes from a dust storm that was swirling in the heat under a blue sky. "Thirst forces men to this horror of war."*

*In Somalia, a well is as precious as a town bank, controlled by warlords and guarded with weapons. During the region's relentless three-year drought, water has become a resource worth fighting and dying over.*

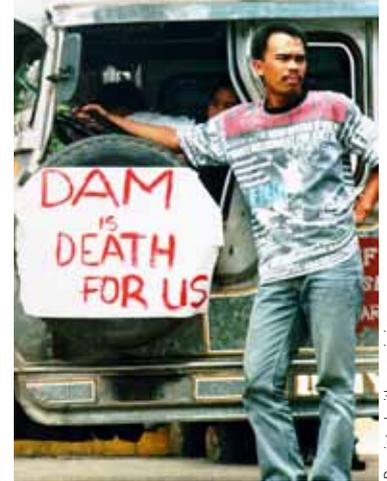
*Long-term solutions to fighting drought include collecting what little rainwater that does fall, building modern irrigation systems and using new water exploration techniques, water experts said. But that kind of effort typically requires the coordination and enforcement of a central government, said Zlatan Milisic, the World Food Program's country director for Somalia. "Somalia at heart is a water crisis that has turned into a food crisis. The effects here are worse than anywhere else because there's no government, there's no stability. To me, this is the most unstable place in the world that is currently suffering a drought."*

*Another widow from the "War of the Well" laments, "I pray to God and wait for my paradise to come. In paradise, I'll be shading under a thick mango tree. I will be fat. My children will be dressed in smart uniforms for school. They will be reading me very nice stories," she said. "The most important is that they won't have thirst. Our mouths will always be wet. We'll drink in peace."*

A sampling of typical water-related conflicts encountered on the local and national levels by development practitioners and human rights advocates includes:

- 1. Poor water system governance and administration:** Issues of corruption, lack of required administrative/technical skills, failure to value water / insufficient pricing and lack of cross-subsidizing to promote social equity.
- 2. Contamination of water sources:** Diminished quality and/or quantity due to unsustainable agriculture, mining—both artisan and capital-intensive, solid wastes, untreated wastewaters, etc.
- 3. Increasing water scarcity:** Result of increasing population, life expectancy, affluence, economic growth, and agricultural production, coupled with poor water resources stewardship.
- 4. Disputes over ownership of water sources and water usage rights:** Competition among industry, agriculture, domestic use, ecological use, etc.
- 5. Prohibitions imposed by landowners impeding access to water facilities:** Through the lack of easements and documentation of past agreements, project implementation, operations, and maintenance can be delayed and even denied as a result of prohibitions imposed by landowners to accessing water sources, pipelines, and other water system infrastructure.
- 6. Disputed access to water supply systems:** Conflict between those who are “in” (who worked to install the systems) and those who are “out” (who didn’t help install the systems), but who now want to be connected and cannot afford the high connection fees.
- 7. External parties’ inappropriate interventions/failure to follow through:** Actions by international cooperation groups and governmental bodies, etc., resulting in divided and distrustful communities.
- 8. Lack of national water laws:** Failure to reach consensus among impacted stakeholders and particular sectors competing for the same water resources.
- 9. Deforestation due to large concessions and illegal cutting:** Devastated ecosystems and ruined local livelihoods, leading to violence and scarcity of water.

- 10. Decentralization without safeguards:** Failure to safeguard local stakeholder participation in decentralized decision-making, often giving rise to fears among the general population of a “back-door” attempt to privatize water services.
- 11. Ruling government political party maneuvering:** Drought relief ordered only for affiliates of governing party, use of anti-terrorist laws to suppress public protest over possible water privatization, government “aid” used to create division in community co-ops.
- 12. Natural disasters and consequences of global climate change:** More extreme weather events, changing animal and plant patterns, increased tropical illnesses, rising sea levels, etc.
- 13. Dams:** Impacts of new construction on upstream/downstream communities and ecosystems, impact by existing dams on lower communities, including outflow discharges during extreme water events.
- 14. Clashes of perspectives/world views:** Water as just another commodity to be bought and sold vs. perception of water as a global/community commons.
- 15. Open-pit metal mining:** Heavy extraction of water resources for start-up and operations, lasting contamination of adjacent water resources, few local jobs, and little public revenue.



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*Protests against the San Roque Dam in the Philippines. Large dams often force indigenous peoples to relocate from lands that for centuries sustained their way of life. Source: International Rivers, [www.internationalrivers.org](http://www.internationalrivers.org).*

## Underlying Causes of Water-Related Conflict

“It is one of the crueler ironies of today’s world water situation that those with the lowest income generally pay the most for their water.”

*Kofi Annan 2003*

Although water is seldom the sole source of conflict, it contributes decisively to conflicts among parties with opposing interests. There are a myriad of underlying causes of water conflict. Though integrally linked and mutually reinforcing, the ways in which water contributes to conflict can be divided along socio-economic, institutional, and environmental lines.

### 1. Socio-Economic Factors:

- Increasing Affluence and Demand
- Poverty and Impoverishment
- Commodification Initiatives
- Social Inequity / Marginalization / Economic Disparities
- Competing Interests at the Community Level

### 2. Institutional/Political Factors:

- Governance Failures / Lack of Transparency
- Transboundary Tensions
- Aggressive Foreign Policies Cloaked in “National Security” Claims
- Culture of Militarism with Impunity / History of Violence
- Dam Projects

### 3. Environmental Factors:

- Water Scarcity
- Population Growth and Basic Human Needs
- Natural Disasters
- Climate Change
- Watershed Degradation
- Water Pollution
- Extractive Industries and Water

Further explanation along with specific examples follow to illustrate these underlying causes of water-related conflict.

## Socio-Economic Factors

### Increasing Affluence and Demand for Water

While the world's population tripled in the 20th century, the demand for renewable water resources grew sixfold. In both absolute and proportional terms, more of humanity is achieving the economic ability to embrace a Western, middle-class lifestyle, from owning a personal vehicle to eating a diet richer in meat and seafood.

The amount of water used per capita for drinking (2 to 5 liters per day) or for washing, sanitation, and other household needs (50 to 200 liters per day) is minute in comparison to the amount of water used in food production and preparation. The per capita utilization of water in producing and preparing food varies from 1,000 liters per day for a survival diet, to 2,600 liters per day for a vegetarian diet to more than 5,000 liters per day of water for a U.S.-style meat-based diet. While approximately 1,000 liters of water is required to produce one kilogram of wheat bread, the same weight in beef requires approximately 13 times more water to produce (World Water Council, 2004).

The water demands of the affluent negatively impact impoverished communities and the vulnerable ecological balance between humanity and the natural world. Here are a few examples of such conflict:

- Increased seafood demand in the developed world has led to ecologically unsustainable activities as large-scale aquaculture and commercial fishing threaten the livelihoods of traditional coastal peoples who depend upon the natural environment.
- Millions of peasants have been forcibly relocated as massive, newly-constructed dams caused their lands and homes to be submerged in order to provide power for industrial complexes churning out products to meet global consumer demand.
- To obtain one ounce of gold (equivalent to a single wedding band), the mining industry must remove on average five to twenty tons of earth (K. Patterson, 2006), employing chemical processes which often result in nearby waters being poisoned for decades to come.

This misallocation of land and water resources is a global social inequity in which the markets serve the interests of the rich at the expense of the basic human needs of the world's poor.

Generations-old cultural values of environmentally sustainable, harmonious lifestyles are often devastated by poverty, especially if it is coupled with migration and urbanization. From use of slash-and-burn farming techniques by impoverished farmers who have few choices to the poisoning of rivers by informal, urban commercial sectors, such degradation of the environment leads to rapidly deteriorating sources of water, in terms of both quantity and quality. The result of this poverty-driven water degradation is often conflict.

“Water promises to be to the 21<sup>st</sup> century what oil was to the 20<sup>th</sup> century: the precious commodity that determines the wealth of nations.”

*Shawn Tully 2000*

### Commodification Initiatives

Water is a battleground issue in which proponents of maintaining the “global water commons” run up against those who espouse the “free market” commodification of water. Examples of opposing ideologies abound where certain westernized local values—individualism, consumerism, capitalism—become global and contradict other older local cultural values. Frequently such conflict results from the conditions under which loans are given by multilateral lending institutions, conditions that require the privatization of urban water services administration. This occurs despite a global context in which some 90% of urban water supply systems are still publicly owned and operated, thus setting in motion enormous conflict within cultures.

Postel and Wolf (2001) note that “Transfers of water system ownership and/or management from public authorities to private multinational corporations are a new source of many water-related conflicts since the 1990s.” Box I.2 provides a concrete example of the profit-driven economic and social damage that often results.

## Box 1.2 “Water Revolt” in Cochabamba, Bolivia

In 1996, the World Bank, the Inter-American Development Bank, and the International Monetary Fund, through a series of structural adjustment policies, made the privatization of the municipal water services for two of Bolivia’s major urban centers, El Alto/La Paz and Cochabamba, a precondition for further water infrastructure development assistance. The multilateral lending institutions also recommended that there be “no public subsidies” to hold down increases in the price of water services. By September 1999, Cochabamba’s water services were turned over to Aguas del Tunari, controlled by the California engineering giant Bechtel. It was the sole bidder in a 40-year concession contract signed behind closed doors.

To understand what provoked tens of thousands of protestors to converge upon Cochabamba in early 2000, despite severe government repression and the declaration of martial law, a quick review of the terms of the water privatization contract is helpful:

- Aguas del Tunari was authorized to take over the municipal water network and all the smaller systems—industrial, agricultural, and residential—in the metropolitan area, and would have exclusive rights to all the water in the district, even in the aquifer.
- Within a few weeks, Bechtel’s company raised water rates by an average of more than 50%.
- The new water company could install meters and begin charging for water on the many cooperative wells throughout the concession area—despite the fact that the government had not helped build the wells. These expropriations were legal under a new water law that had been rushed through the Bolivian Congress.
- The contract guaranteed the company an average 16% annual return on its investment, which would be adjusted annually to the consumer price index in the United States.
- Peasants were prohibited from constructing collection tanks to gather water from the rain in the area of concession granted to the transnational water corporation. In order to do so, permission would be required of the government regulating agency. W. Finnegan reported, “Bechtel came to Cochabamba and, as the local peasants put it, tried to ‘lease the rain.’ ” (2002).

Only after 17-year-old Victor Hugo Daza was assassinated by an army sniper—a graduate of the U.S. School of the Americas—did Bechtel finally leave Bolivia (Olivera 2004). Yet the aggression against Bolivia’s people continued. In November 2002, Aguas del Tunari sued the Bolivian government for \$50 million, through the International Centre for Settlement of Investment Disputes (ICSID), a mechanism of the same World Bank that had imposed the privatization in the first place. The \$50 million claim was not only for the recovery of investments, which were estimated at less than a million dollars (for the half year of Bechtel’s management of Cochabamba’s water services), but primarily for estimated unrealized future profits due to the annulment of the 40-year concession contract. J. Schultz (2006) noted that only under substantial international civil society pressure did Bechtel finally agree to drop their case before ICSID in January 2006 for a token payment of 2 bolivianos (30 U.S. cents). The impoverished country of Bolivia by then had already spent an additional one million dollars in legal fees over three years defending itself.



Photo by Amit Srivastava/IndiaResource.org. Reprinted with permission.

March to beverage bottling plant in Mehdiganj, India.

The World Bank Group's *Private Participation in Infrastructure Database* points out that, "53 water privatization projects representing 31% of total investment in the water sector [were] cancelled or under distress," for the period 1990-2006—23 of them in East Asia and 25 in Latin America. A total of 93 countries participated in water privatization projects in 2000, but by 2007 the number of countries was down to 63. Total annual investment in the sector peaked in 1997 at \$10.2 billion, falling to \$3.2 billion in 2007. In 2006, the UNDP's Human Development Report acknowledged, "The conviction that the private sector offers a 'magic bullet' for unleashing the equity and efficiency needed to accelerate progress towards water for all has proven to be misplaced" (p. 21).

Similarly, unsustainable groundwater mining practices by water and beverage bottlers, as depicted in Box 1.3, are causing untold numbers of conflicts throughout the developing and the developed world.

### Box 1.3 Indian Farmers vs. Bottling Industry

Water and beverages bottlers are coming under increasingly intense scrutiny from neighboring communities in both developing and developed countries as local water supplies dwindle. One of the most widely-covered conflicts involves Coca-Cola's bottling plants in India.

Under pressure from student-led campaigns in the United States, Canada, and the United Kingdom, supporting the demands of local residents for more responsible corporate behavior, the Energy and Resources Institute (TERI) performed an assessment covering six of the company's fifty plants in India. The study concluded in January 2008 that the company sited its bottling plants in already water-stressed areas, without much thought given to the impacts on communities. An alarming incidence of pollution in the immediate vicinity of the bottling plants was also highlighted, with not one plant having met the company's own wastewater treatment standards (India Post News Service, 2008).

The communities' claims of declining water tables have also been confirmed by data from the Ground Water Board. This Indian governmental agency observed that ground water levels dropped up to 8 meters (26 feet) in the first seven years of the company's operations, from 1999 to 2006. The result has been the drying up of wells and hand pumps in the vicinity of the bottling plants, posing a significant crisis for farmers who rely on the ground water resource to meet their needs. More than 80% of the community of Mehdiganj engages in agriculture, where one of the company's bottling plants is located, and groundwater remains the primary source of water for the community to meet all its water needs. Organized community protests and marches are frequent, with tensions steadily rising (A. Srivastava, 2008).

The failure to consider the full social and economic costs of unsustainable water practices practically guarantees resentment and future conflict.

## Social Inequity / Marginalization / Economic Disparities

In the early 1900s, William Mulholland, superintendent of the Los Angeles Water Department, resolved the city's water shortage problem through a brutally effective innovation: a "water grab"—events dramatized in Roman Polanski's movie *Chinatown* (1974). By disenfranchising farmers in the Owens Valley (200 miles away) of the water they were using, Mulholland made it possible for Los Angeles to become a booming city (M. Reisner, 1986). While such kinds of water disputes have long since been resolved by Californians in courts of law, across much of the developing world competition over water is intensifying at an alarming rate, giving rise to intense and, frequently, violent conflict. The danger exists that a new form of "Mulhollandism" may arise and the interests of the poor—especially small-scale, subsistence farmers—may be pushed aside as large agricultural, mining and/or industrial interests (constituencies with a strong political voice) assert their demands for water. As noted by UNDP, "Inequalities in power can induce deep inequalities in access to water" (2006b, p. 27).

While affluence and poverty have already been discussed, the role of power imbalances in water conflict cannot be overstated. "Water flows toward power and money," Marc Reisner concluded in his book, *Cadillac Desert*, which detailed the history of water development in the American West. Whether in a transboundary international river basin, where one country has military and economic dominance over its riparian neighbors, or in the case of a conflict between upstream transnational mining interests and downstream peasant farmers, socio-economic disparities fuel the abuse of power that can lead to conflict.

## Competing Interests at the Community Level

While many communities have extremely effective mechanisms for dealing with conflict, it is important for water development practitioners, who operate mainly at the local level, to know that instability is often the norm in poverty-stricken and socially excluded areas. Thulani Ndelu of the South African NGO Valley Trust identified the following community-level conflicts commonly encountered in their grassroots efforts (1998):

- Political factions struggling for power, resulting in unstable communities subject to violence and virtual civil war
- Lack of basic resources and unemployment
- Corruption involving access to opportunities and funds
- Discrimination regarding gender, age groups, ethnicity, tribal status, etc.
- Shortage of organization and planning
- Few examples of effective and democratic local institutions

"Water flows toward power  
and money."

*Marc Reisner 1986*



Photo by Jason Gehrig/CRS, 2008.

Political party affiliation cards of Salvadoran peasants forced to become members of the governing party in power as a condition for receiving drought relief.

“Systemic and repeated protests should be viewed as evidence that past policies have failed, and as an early warning that must not be ignored in the rush to implement particular notions of development.”

*Ken Conca 2006, p. 2*

- Lack of common vision
- Limited experience with the skills and processes of conflict management
- Histories of unresolved and simmering disputes
- Little meaningful communication between parents and teenagers, men and women, neighbors, etc.

## Institutional/Political Factors

Beyond just water scarcity itself, water-related conflicts are also caused by the way in which water and its uses are governed. Fragmented institutional structures, and the resulting lack of coordination both between and within states, are major contributors to water-related conflict. This adds a political dimension that needs to be addressed in any analysis of water and conflict, alongside the ecological, hydrological, social, and economic dimensions (H. Ravnborg, 2004).

## Governance Failures / Lack of Transparency

Public policies are often inadequate for addressing the competing interests around water resources. The “norms” that are in place benefit the sector for which a given regulation is passed, whether it be mining, hydroelectric, irrigation, or municipal water supply. With so much on the line, underpaid public officials charged with enforcement (regulating agencies, police) or interpretation (judicial) of laws and regulations are routinely swayed by corruption. Transparency International’s 2008 Global Corruption Report, focusing on corruption in the water sector, includes reference to a survey in South Asia which concluded, “The impact of corruption in the construction of water networks may raise the price of access by 25 to 45 percent” (p. 16).

On the one hand, militants of political parties are often placed in administrative positions of public enterprises more because of their connections to the governing parties in power than their technical skills. On the other hand, privatization schemes are frequently marred by corruption from the onset, through the relinquishing of state control by elected officials and the structuring of such concessions to thwart public oversight through vast confidentiality clauses. In either case, whether publicly or privately administered, municipal water services often lack accountability. In the absence of transparency, accountability, and dialogue, conflict can fester.

## Transboundary Tensions

National, regional, and local borders are often drawn along watercourses, making water one of the most common transboundary issues. More than 45% of the earth's land surface, encompassing 40% of the world's population and 60% of global river flows, is found within the world's 263 international river basins, which cover 145 nations (Wolf et al., 2006). Differing perspectives on water-related governance issues by neighboring political entities can lead to conflict over such issues as water diversion, poor water quality, infringed water rights, and the like. Tensions between countries may hinder sustainable development, indirectly contributing to further poverty, social instability, and migration.

## Aggressive Foreign Policies Cloaked in “National Security” Claims

Political scientists of the “political realism” school describe the behavior of nations as a constant vying for greater relative power and wealth. “Might makes right” and power maximization is often the rule of the day in an international system that has minimal global governance. Nations often fend off challenges to such behavior by depicting them as threats to “national security.” Thus when a natural resources grab takes place, whether in the form of hydrocarbons or water; the employment of national security and national interest arguments may be used to squelch domestic dissent. Many a government, including that of the U.S., has invoked “national security” to justify policies ranging from preemptive military invasions/occupations to frontier wall-building to the repression of internal dissent. Control of transboundary water resources—whether of surface waters or aquifers below—is likewise at times justified by countries utilizing “national security” and “national interests” discourse. Box 1.4 presents just such a scenario.

### Box 1.4 Israeli Separation Wall and Palestinian Water Resources

In the case of the seemingly intractable Israel-Palestine conflict, the confiscation and control of Palestinian water resources is a “defining feature of the Israeli occupation and a major impediment to a just resolution of the conflict” (CESR, 2003b, p. 1). That the Palestinians’ relative daily water consumption is just a fifth of that of the Israelis’ (CESR, 2004) and a ninth of that of the Jewish settlers in the West Bank (UNDP, 2006b, p. 34) underscores the injustices the Palestinians face.

Israel monopolizes 85% of the water from the mountain aquifer lying beneath the West Bank, providing the supply to meet 25% of Israel’s water consumption (CESR, 2003b, p. 1). National security serves as the justification for such measures. In 1990, Israel’s Ministry of Agriculture stated, “Relinquishing the western slopes of the Judean and Samarian hills (the Western West Bank) will create a situation in which the fate of the Israeli national water supply could be determined by the actions of whatever Arab authority [controls] the evacuated areas after withdrawal. It is difficult to conceive of any political solution consistent with Israel’s survival that does not involve complete, continued Israeli control of the water and sewage systems...” (CESR, 2003a, p. 38).

This control over the “national water supply” is being further arranged through the installation of a separation wall. In the wake of the Palestinian uprising in 2002, the Israeli government authorized construction of a security wall, averaging 8 meters (25 feet) high—complete with electric fences, trenches, and security patrols along the entire 220 mile length of the West Bank (Pengon, 2002, p.3). Israel maintains that the wall is serving its citizens’ security concerns.

Yet the separation wall is not being built on, or in most cases even near, the Green Line, the de facto pre-1967 border between Israel and the West Bank. In fact, at some points the wall is being built 7 km inside the Green Line. The confiscated land, some of Palestine’s most fertile, lies directly over the Western Aquifer, which is the largest source of groundwater in the West Bank (CESR, 2003a, p. 37).

Because of the wall, several Palestinian villages are losing their only source of water. The village of Jayous had 72% of its lands isolated from it by the wall, along with all of its seven groundwater wells. The City of Qalqiliya—an area once known as the West Bank’s “bread basket”—is almost entirely encircled by the wall, resulting in 50% of its agricultural lands being confiscated, along with 19 of its water wells. This represents 30% of the city’s water supply (CESR, 2003a, p. 38).

The route of the wall, 80% of which is being built on occupied Palestinian land, and its associated regime, were declared illegal in an advisory opinion by the International Court of Justice (ICJ) in 2004 (Oxfam, 2007, p. 5). Yet construction continues, with two thirds of the wall already constructed as of early 2008 (L. Copans, 2008).

## Culture of Militarism with Impunity / History of Violence

In a statistical analysis conducted on global data from violent civil conflicts between 1965 and 1999, Collier et al. (2000) found that the risk of civil war was systematically linked most strongly to dependence on exports of primary commodities (i.e. raw materials such as oil and minerals), low average incomes, slow growth, and a large diaspora. The study also found that countries that have recently experienced violent conflict run a very high risk—approximately 40%—of reversion to violent conflict in the first decade of post-conflict peace. The process of reconstructing states which have been through civil war marked by armed violence unrestrained by punishment is slow and uncertain (Zartman, 1995).

As a scarce resource under increasing demand, water can often serve as a flash point that drives historically opposed parties back into violence. This is especially relevant for the international development community, given that many of its projects are being undertaken in war-torn and strife-ridden regions of the world. The role of the local civil society is essential to reconstruction. Water-oriented community projects allow for such civil society leadership structures—from tribal leaders to local NGOs—to participate directly in the rebuilding of their country.

## Dam Projects

Conflicts involving dams and flow diversions frequently generate international tensions along major transboundary river basins, from the Nile bounded by ten African countries; to the Tigris and Euphrates, involving Turkey, Syria and Iraq; to the Indus River, shared by India and Pakistan.

The World Commission on Dams Report (2000) noted that over 45,000 large dams have been built around the world to meet energy and water needs, including irrigation, flood control, and domestic supply. More than one-third of the world's countries rely on hydropower for more than half of their electrical supply, with large dams generating 19% of electrical needs overall. Some 30% to 40% of the 271 million hectares irrigated worldwide rely on dams.

Yet such development-enabling dams have come at a tremendous social and environmental cost. Rivers have been fragmented, and between 40 and 80 million people have been displaced. Millions of people living downstream from dams—particularly those reliant on natural floodplain function and fisheries—have suffered serious harm to their livelihoods. Moreover, the report highlighted sustainability concerns including investment costs required to ensure the integrity of the dam over time, sedimentation and the resulting long-term loss of storage, and waterlogging and salinity of one-fifth of irrigated lands, including those supplied by dams.



Photo by Chris Seremet/CRS

*Nyamba ya Mungu Dam in the Pangani River Basin, where conflict over access to water has long been widespread. Northeastern Tanzania, February 2008.*

## Environmental Factors

### Water Scarcity

Many places in the world are characterized by arid climates, as identified in Figure I.3. Given such intense water scarcity, competing interests over the available water resources will naturally lead to increasing tensions, even as other inter-related factors, such as global warming, population growth, and socio-economic marginalization, weigh into the mix.

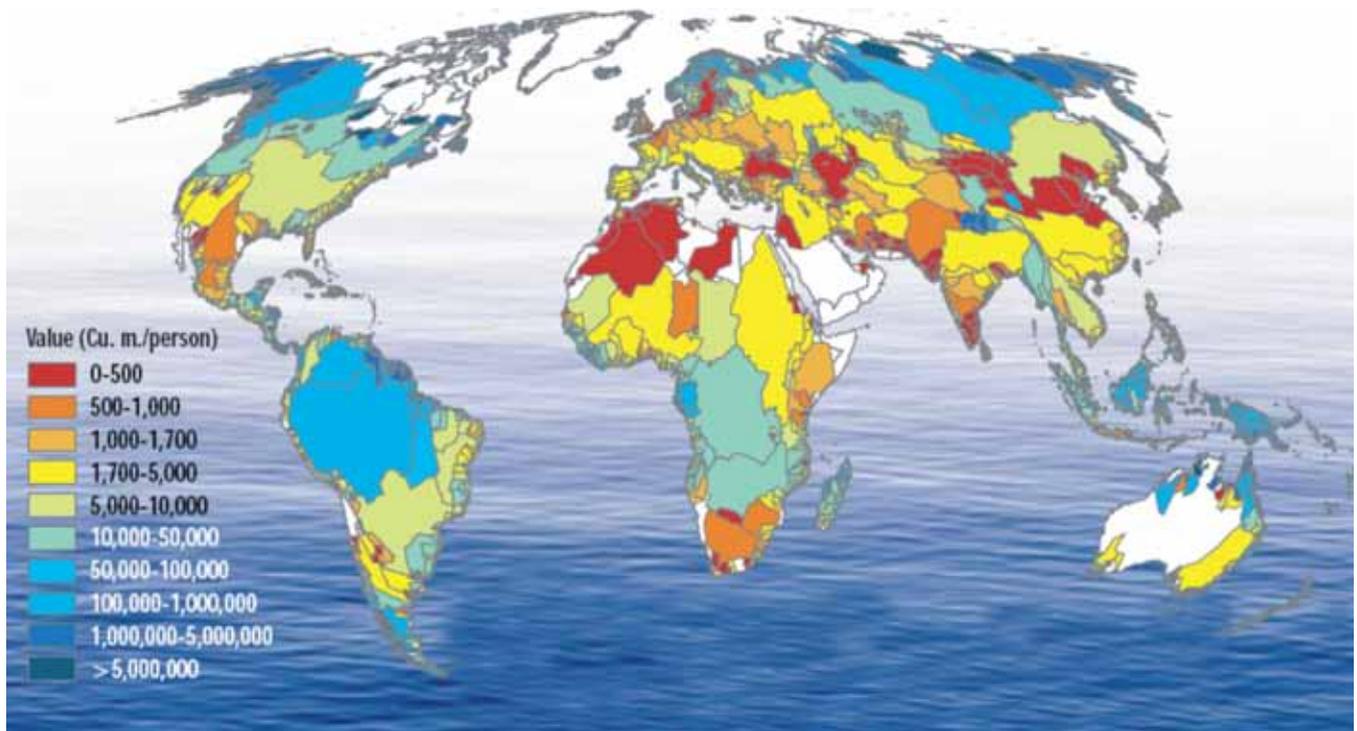


Figure I.3. Water Scarcity—Freshwater Per Person by Basin

Source: *Transboundary Freshwater Dispute Database*, Department of Geosciences, Oregon State University, <<http://www.transboundarywaters.orst.edu>>. Reproduced with permission.

## Population Growth and Basic Human Needs

In the second half of the 20th century alone, the renewable supply of freshwater per person fell 58% as world population swelled from 2.5 billion to 6 billion people. Global population is projected to expand to 8.7 billion around the year 2050, before it plateaus (UNDP, 2006b). Much of this population growth will continue to take place in already water-stressed countries of the developing world. Increasing demand, along with an increase in the number of parties competing for a finite resource, such as freshwater, increases the likelihood of tension and conflict. Box I.5 provides insights into where high population growth and increasing water scarcity are likely to spell conflict in the years ahead.

### **Box I.5 Population Growth, Water-Related Stress, and Conflict**

*Excerpts from S. Postel and A. Wolf, "Dehydrating Conflict" (2001).*

*Water stress is spreading as populations increase. By 2015, nearly 3 billion people— 40 percent of the projected world population— are expected to live in countries that find it difficult or impossible to mobilize enough water to satisfy the food, industrial, and domestic needs of their citizens. This scarcity will translate into heightened competition for water between cities and farms, between neighboring states and provinces, and at times between nations.*

*The largest and most combustible imbalance between population and available water supplies will be in Asia, where crop production depends heavily on irrigation. Asia today has roughly 60 percent of the world's people but only 36 percent of the world's renewable fresh water. China, India, Iran, and Pakistan are among the countries where a significant share of the irrigated land is now jeopardized by groundwater depletion, scarce river water, a fertility-sapping buildup of salts in the soil, or some combination of these factors. Groundwater depletion alone places 10 to 20 percent of grain production in both China and India at risk. Water tables are falling steadily in the North China Plain, which yields more than half of China's wheat and nearly one third of its corn, as well as in northwest India's Punjab, another major breadbasket.*

*As farmers lose access to irrigation water and see their livelihoods deteriorate, they may not only resort to violent protest but also migrate across borders and to restive, already overcrowded cities. Such has been the case in Pakistan, where falling agricultural output has prompted a massive rural migration to large urban centers, leading to renewed outbreaks of ethnic violence.*

*Countries commonly adapt to water stress by importing more of their food, provided they have the foreign exchange to do so. It takes about 1,000 cubic meters of water to grow one ton of grain. By importing wheat and other staples, water-stressed countries can allocate more of their scarce fresh water to cities and industries, which generate far more economic value per liter of water than agriculture does. As an additional billion people are added to water-stressed countries over the next 15 years and as more countries join the ranks of food importers, demand for international grain will increase. For those nations without sufficient foreign exchange to turn to imports, notably those in sub-Saharan Africa (itself a region of significant population growth), higher world grain prices will likely mean greater hunger, more calls for humanitarian aid and increased likelihood of conflict.*



Photo by Karl Grobl for CRS, 2005.

*General scenes of destruction, Banda Aceh, Indonesia, 2005. More than two weeks after the tsunami hit, in December of 2004, a body still floats in water less than 20 meters from the main road.*

Conflicts are especially likely in countries burdened by physical water scarcity (e.g., North Africa and Middle East) and/or economic water scarcity (i.e., countries with adequate primary water resources but inadequate infrastructure and institutions to make use of them). Such countries struggle to achieve food security for their citizens. “Virtual” water imports—water used in the production of imported foodstuffs—are limited options for low-income countries with large food deficits and insufficient foreign exchange to pay for them. Even impoverished countries that can afford “virtual” water imports are more susceptible to domestic food security threats during times of spiking food prices, such as that seen in early 2008, leading to situations of internal conflict. Weather-related droughts, such as the one gripping Australia over the past six years, causing its rice crop to plummet by 98% (K. Bradsher, 2008), exemplify another aspect of the way in which water resources affect food crisis.

## Natural Disasters

Flooding, hurricanes, tsunamis—the violence inflicted upon human populations by natural disasters is often devastating. In the aftermath of such water-related disasters, competition for water can be particularly volatile. Unfortunately, the effects of these natural disasters are often intensified by man-made disasters that have already occurred prior to the natural event. As described in Box 1.6, ecologically unsustainable practices, from coral reef and mangrove forest destruction to clear-cutting of forests for timber, have diminished the lines of defense against natural disasters.

### Box 1.6 Asian Tsunami: Natural and Unnatural Disasters

The United Nations estimates that approximately 230,000 people died in the December 26, 2004, Asian Tsunami (U.N. Special Envoy for Tsunami Recovery). Yet the violence inflicted upon the peoples of Indonesia, Sri Lanka, Bangladesh, Thailand, and other Asian countries was not solely the result of an immense natural disaster. Sadly, a prior “unnatural” disaster—the elimination of natural breakwaters, such as coral reefs, coastal mangrove forests, and sand dunes—exacerbated the devastating effects of the tsunami (A. Browne, 2004).

Following an extensive two-year scientific study, a team of researchers from Tohoku Gakuin and Tohoku Universities of northern Japan concluded that natural barriers, such as mangrove forests and coral reefs, would have saved approximately half the casualties caused by the 2004 quake in their study area. The research team estimated that the area of mangrove swampland at a survey spot in Banda Aceh, Indonesia, in 2003 was only 12% of the amount that should have existed naturally. Since the 1960s, the mangrove forests of Southeast Asia have been systematically destroyed to make way for commercial shrimp farming and tourism, supported by governmental and multilateral lending institutions. Protective regulations in place have been diluted through these lobbies.

Shrimp farming alone is considered to be causing mangrove forest loss at a rate of 1 to 2% per year (E. Yano, 2008). While 72% of farmed shrimp comes from Asia, the vast majority of it is eaten in the US, Western Europe, and Japan, where consumption has increased by 300% in the last 10 years (S. Stonich and C. Bailey, 2000).

Since three quarters of Southeast Asian commercial fish species spend part of their life cycle in the mangrove swamps, the loss of these swamps has resulted in declining fish harvests. Moreover, the commercial feeds, pesticides, antibiotics, and non-organic fertilizers used in intensive shrimp farms generate huge amounts of pollution, destroying many of the remaining fish and harming the coral reefs. As the fish have declined, desperate fishermen have resorted to dropping dynamite into the reefs to drive them out. Seventy percent of the world’s coral reefs have already been destroyed. Eighty percent of Indonesia’s reefs are in danger (UNEP, 2001). This human destruction of coral reefs is also driven by motives other than fishing. Local inhabitants mine coral to be ground up and used as an ingredient in house paint (C. Dreigus, 2007). Shipping interests view the reefs as an impediment to their ability to meet the transport needs of the growing South Asian economy (A. Browne, 2004).

“Those coastlines with intact coral reefs, mangroves, vegetated dunes and robust coastal forests came off better [in the 2004 Asian Tsunami] than those degraded by pollution and insensitive land use. So the environment is not a luxury. . . . It is an economically important insurance policy whose wisdom we ignore at our peril.”

*Klaus Toepfer 2005*

The graph in Figure I.4 documents an exponential increase in number of disasters over the course of the 20th century. The world's exposure to natural hazards has been increasing in tandem with the planet's growing population and infrastructure. This is particularly true because the strongest population growth is located in coastal areas, areas that have the greatest exposure to floods, cyclones and tidal waves. To make matters worse, land that remains available for urban growth in many areas is situated in risk-prone areas, such as flood plains or steep slopes subject to landslides.

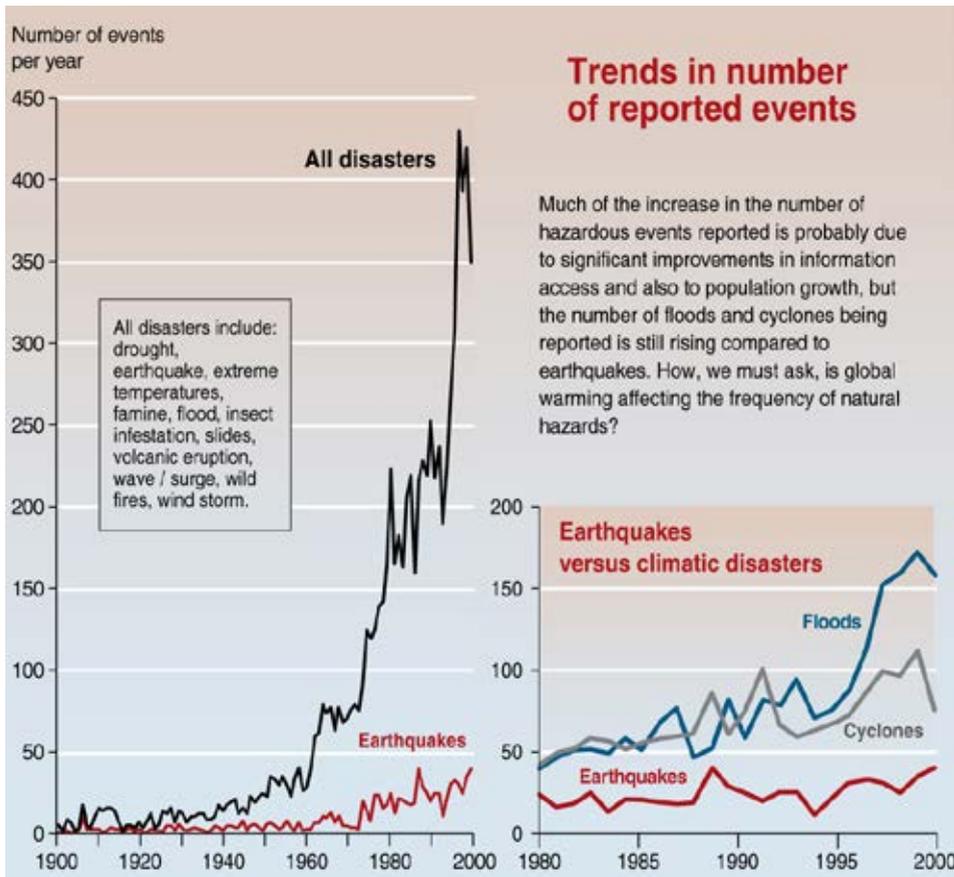


Figure I.4. A Century of Trends in Natural Disasters, 1900 to 2000.

Source: Emmanuelle Bournay, UNEP/GRID-Arendal, Centre for Research on the Epidemiology of Disasters (CRED), 2005., <<http://maps.grida.no/go/graphic/trends-in-natural-disasters>>. Reprinted with permission.

## Human-Induced Climate Change

Global warming, also referred to as human-induced climate change, will transform the hydrological patterns on earth that determine the availability of water. Many of the world's most water-stressed areas will get even less water, and water flows will become less predictable and more subject to extreme weather events. Climate change is expected to cause sea levels to rise, which would have dire consequences for many freshwater resources. For example, the river delta systems in Bangladesh could become saline, destroying the agriculture-based livelihoods of millions of people. In East Africa, the Sahel, and Southern Africa, rainfall is predicted to decline and temperatures to rise. As a result of climate change, in areas where freshwater becomes more scarce, tensions around water can be expected to increase (UNDP, 2006b).

A 2007 report by D. Smith and J. Vivekananda of International Alert, cited by UN Secretary-General Ban Ki-moon, calls for governments and local communities to take immediate steps to prepare to adapt to the pressures of climate change. The consequences of climate change, especially in states already enduring poverty, instability, and poor governance, will likely include increased violent conflicts, which will in turn further undermine the ability of the states and communities to adapt to the effects of climate change. The ongoing massacres in Darfur, as described in Box I.7, could be a harbinger of what is to come, as the impacts of global warming intensify. To highlight the links between climate change, peace, and violence, the International Alert report, while acknowledging that "no conflict ever has just a single cause," identifies 46 countries with 2.7 billion people who are at high risk of armed conflict, due to the consequences of climate change. Another 1.2 billion people in 56 additional countries are projected to be at a high risk of political instability (pp. 3–4). The global map in Figure I.5 presents the extent of the impending crisis.

The failure to assist these communities currently enduring severe socio-economic and political pressures in adapting to climate change will only exacerbate their existing grievances, increasing the likelihood of violent conflict.

"Nobody can say that Hurricane Katrina was definitely caused by climate change. But we can say that climate change means more Katrinas. For any single storm, as with any single drought, it's difficult to say. But we can say we'll get more big storms and more severe droughts."

*Peter Schwartz, co-author of a 2003 Pentagon report on climate change and national security, quoted in S. Faris 2007*



Photo by Brian Steidle/US Holocaust Memorial Museum. Reprinted with permission.

The village of Um Zeifa in Darfur being burnt to the ground after the Janjaweed attacked and looted it.

### Box 1.7 Darfur: Conflict Driven by Climate Change and Scarcity of Land and Water

Excerpts from Ban Ki-moon, "A Climate Culprit in Darfur" (2007), and the report by D. Smith and J. Vivekananda, "A Climate of Conflict: The Links Between Climate Change, Peace and War" (2007).

*Almost invariably, we discuss Darfur in a convenient military and political shorthand—an ethnic conflict pitting Arab militias against black rebels and farmers. Look to its roots, though, and you discover a more complex dynamic. Amid the diverse social and political causes, the Darfur conflict began as an ecological crisis, arising at least in part from climate change.*

*Two decades ago, the rains in southern Sudan began to fail. According to U.N. statistics, average precipitation has declined some 40 percent since the early 1980s. Scientists at first considered this to be an unfortunate quirk of nature. But subsequent investigation found that it coincided with a rise in temperatures of the Indian Ocean, disrupting seasonal monsoons. This suggests that the drying of sub-Saharan Africa derives, to some degree, from man-made global warming.*

*It is no accident that the violence in Darfur erupted during the drought. Until then, Arab nomadic herders had lived amicably with settled farmers. Black farmers would welcome herders as they crisscrossed the land, grazing their camels and sharing wells. But once the rains stopped, farmers fenced their land for fear it would be ruined by the passing herds. For the first time in memory, there was no longer enough food and water for all. Fighting broke out. By 2003, it evolved into the full-fledged tragedy we witness today (Ban Ki-moon, 2007).*

*A campaign of ethnic cleansing, to date has caused over 200,000 deaths and the displacement of over two million people. The campaign itself is taking a further toll of already scarce resources. Militias in Darfur are known for the intentional destruction of villages and forests. The loss of trees in these campaigns reduces the amount of shelter available for livestock and the amount of fuel wood for local communities. This threatens their livelihoods and results in their displacement, while simultaneously worsening the impact of desertification, which makes further conflict over land and water access more likely. (D. Smith and J. Vivekananda, 2007, p. 12)*

## The Double-Headed Risk

The consequences of climate change include a high risk of armed conflict in 46 countries with a total population of 2.7 billion people, and a high risk of political instability in a further 56 countries with a total of 1.2 billion.

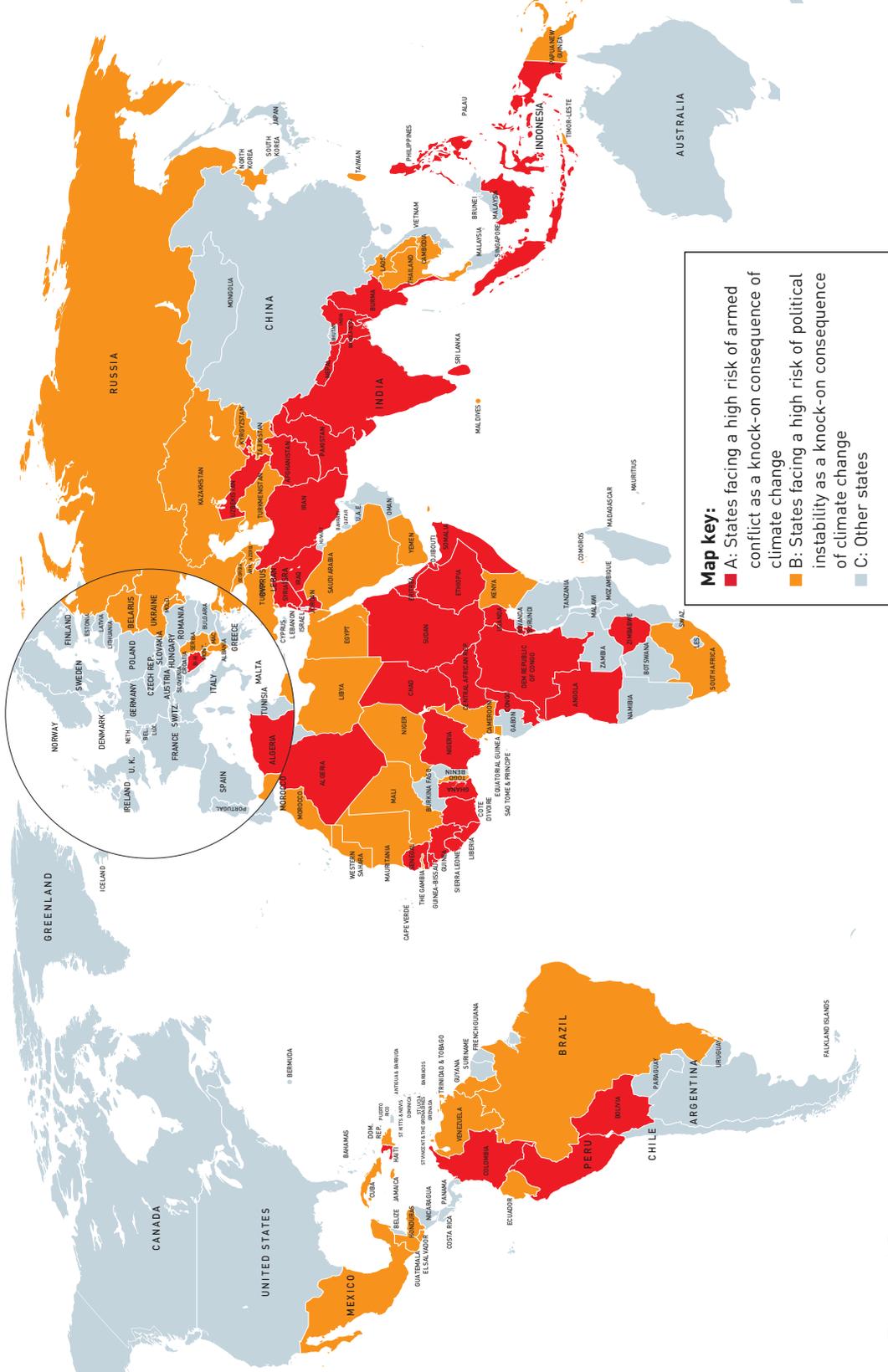


Figure 1.5. Climate Change and Global Insecurity.

Source: D. Smith and J. Vivekananda, "A Climate of Conflict: The Links Between Climate Change, Peace and War," 2007, pp. 18–19. Reprinted with permission.



Photo by Jason Gehrig/CRS.

*Cow blood from the municipal slaughterhouse in El Alto, Bolivia, being dumped into the adjacent river, which, en route to Lake Titicaca, is also contaminated with untreated industrial and residential wastes.*

## Watershed Degradation

Downstream victims of watershed degradation can be found throughout the world, ever more so now as farmland and cattle grazing push further into formerly forested areas. With the loss of natural vegetation, surface runoff increases significantly as rainfall once absorbed into the earth now rushes downhill, itself a cause of increased erosion, silting of waterways, and intensified flooding. (See Box 1.8.) Watershed degradation, with its negative impact on the replenishing of underground aquifers, i.e., groundwater recharge, also directly reduces the availability of water for users downstream. The upstream-downstream problems within watersheds are potential sources of conflict at both the local and macro levels.

### Box 1.8 Watershed Degradation and Argentina’s “Worst Environmental Disaster”

The Argentinean city of Santa Fe, located near the junction of the Paraná and Salado rivers and home to a metropolitan population approaching half a million people, has been flooded repeatedly. However, in May 2003, floods struck the city in an unprecedented manner, inundating the homes of 200,000 of its residents. It was deemed by many to be “the worst environmental disaster of Argentinean history,” including a large number of fatalities. However, local environmental groups note that it was not just a “natural” disaster. They point to the watershed degradation upstream, where “exhausted soils because of monocultures like soybean and unwise deforestation throughout the whole basin” have significantly increased surface run-off, causing more significant surges in flooding (Proteger; 2003).

## Water Pollution

The U.S. Environmental Protection Agency divides water pollution sources into two categories: point and non-point. Point sources of water pollution are stationary locations such as sewage treatment plants and factories. Non-point sources are more diffuse and include runoff from agricultural and mining activities, and from paved roads. Violence is inflicted upon downstream riparians through the discharge of untreated or inadequately treated upstream residential, commercial, and industrial wastewaters, through poorly constructed and/or poorly located landfills, as well as through uncontrolled dumping of solid wastes into waterways. As a case in point, more than 90% of Salvadoran surface waters are contaminated, with only 3% of the collected urban wastewater being treated prior to discharge into waterways (Foro Nacional de Agua, 2008). Likewise, downstream urban water supplies dependent

upon surface waters are vulnerable to damaging effects of rural agricultural chemical runoff (e.g., fertilizers, herbicides, pesticides). In some situations, the damage is far-reaching: vegetables and other crops grown downstream, destined for market, are irrigated with contaminated surface water; and fish tainted with high levels of heavy metals and pharmaceutical wastes end up back in urban food markets. Whether due to lack of resources or lack of political will, pollution of surface waters in developing countries is at crisis levels, certainly leading to conflicts that fall within the scope of this text.

## Extractive Industries and Water

Whether mining operations involve small-scale cooperatives, state-run enterprises, or transnational, capital-intensive corporations, the economic incentives to properly treat and contain the chemical and mineral pollution resulting from mining operations simply do not exist. An attitude of “out of sight, out of mind” persists. Where regulations exist to correct for this market failure, enforcement is often weak or non-existent. In addition, communities adjacent to large-scale mines often find their traditional water sources drying up due to the massive water requirements of the mining operations. Farmers, fishers, and community members relying on water downstream of the mine suffer the health and economic consequences of contaminated waterways. Employees of mining operations, often pitted against downstream users of waters contaminated by their operations, become concerned that their jobs could be eliminated by the enforcement of any anti-pollution measures that might exist. Divided, the poor can end up fighting amongst themselves. Meanwhile, transnational corporate mining operations have in recent years continued to post record profits to their shareholders.

In order to understand the root causes of much of the conflict resulting from mining operations, a quick primer is first required on two of the mining industry's principal threats to the environment—*unsustainable water extraction and water contamination*.

*Unsustainable water extraction* occurs because mining operations require large quantities of water to extract valuable minerals from the bare rock. The minerals may be solids, such as diamonds, gold, coal, iron, sand and gravel; liquids, such as crude petroleum; or gases such as natural gas. Water is required in all processes, including quarrying, milling (crushing, screening, washing, and flotation of mined materials), and, in liquid/gas extraction, re-injecting extracted water for additional mineral recovery. Since mining is such a water-intensive practice, local water resources are frequently overused and, in more arid areas, destroyed, ruining the livelihoods of the nearby communities and ecosystem.

*Water contamination* occurs principally in the form of cyanide or mercury contamination, acid mine drainage, and/or increased salinization of soil.

“Personally, I would prefer that Hurricane Mitch come again over this mining monster. Mitch lasted eight days, but this mine has now been here 8 years, ruining our lives and the health of our children.”

*Rodolfo Arteaga, former mine worker in Goldcorp's Valle de Siria open-pit gold mine. With high levels of lead in his blood and a child born with birth defects, he became a leading community advocate against mining abuses.*

“If history holds one lesson, it is that where there is gold, there is conflict, and the more gold, the more conflict.... Where the mining corporation sees a new reserve of wealth, the local farmers and cattle grazers see sacred mountains, cradles of the water that sustains their highland lives.”

*J. Perlez and L. Bergman 2005*

Contamination from mining operations pollutes waterways, destroys habitats, and poses serious threats to human and animal health.

*Cyanide contamination* results from leaks or spills in mining operations that use cyanide-leaching processes to strip metals, such as gold, silver, copper, nickel, cobalt, or molybdenum, from the extracted ore. Since cyanide leaching began in the 1970s, billions of gallons of cyanide contamination have been released, with devastating effects upon the natural and human environment.

In general, fish and other aquatic life are killed by cyanide concentrations in the microgram per liter (part per billion) range. Bird and mammal deaths result from cyanide concentrations in the milligram per liter (part per million) range. Cyanide poisoning can occur through inhalation, ingestion, and skin or eye contact. One teaspoon of a 2% solution can kill a person (Wisconsin Environmental Resource Center, 2004).

While the use of cyanide is generally confined to large-scale, capital-intensive mining operations, a more common contaminant from smaller-scale, cooperative and artisan mining is mercury. Though less expensive and less effective in leaching processes, mercury is more widely available than cyanide. Mercury vapors are often inhaled by miners and nearby villagers during the gold extraction process. Health experts say methyl mercury is an especially harmful substance for the unborn, infants, and children, causing impaired neurological development, which can lead to mental retardation. Mercury pollution of surface waters may enter the food chain through consumption of fish (F. Andrew, 2006).

*Acid mine drainage* poses equally significant threats, but over a much longer time period, as explained in this excerpt from an interview with Benoit Godin, head of Environment Canada's Environmental Contaminants section in Whitehorse, Canada (2005):

*Acid mine drainage occurs when sulphide compounds, like the iron sulphide material in a mine, are broken up and exposed to the atmosphere during mining operations. On contact with oxygen and water, the sulphide compound starts to oxidize, producing sulphuric acid and dissolved metal.*

*As the acid drains away from the rock from which it was produced, it dissolves metals from them along the way and carries them into the natural water drainage system. Almost any metal in the area might be dissolved and swept into the waterways. Typical metals most likely to be found in acid mine drainage are zinc, lead, nickel, arsenic, and/or copper.*

*The acid mine drainage makes the water in the streams themselves more acidic, which means that the metals stay in solution and flow downstream, traveling many kilometers from their sources. The metals will stay in their dissolved form until the water passes through alkaline rock that can reduce the acidity of the water enough to precipitate them out of the solution.*

*Dissolved metal can do a lot of damage to the inhabitants of the stream. It basically kills fish. Metal ions in the water attach themselves to the fish's gills, interfering with respiration. They cause damage to liver and kidneys, and weaken the fish so that they are less fit to grow and reproduce. Besides fish, invertebrates, algae, and every aspect of life in the stream can be affected. In high enough concentrations, the acid-dissolved metals can even endanger larger animals and humans who drink the water.*

*Once acid mine drainage occurs, the contamination can go on for hundreds of years unless the leaking is plugged or an adequate collection/treatment scheme is installed, both of which are very expensive processes and unlikely to occur where State resources, regulations and enforcement measures are inadequate.*

*Salinization of the soil occurs when brackish groundwater seeping into the mine is pumped out to shallow evaporation ponds. This highly concentrated brine water in the ponds is susceptible to overflows during heavy rains. Once it enters the bordering natural waterways during flooding, it disrupts natural ecosystems and devastates peasant families' livelihoods downstream, where fields and grazing lands eventually become barren (E. Cuthbert, personal communication with authors, Oct. 15, 2008).*

In 2001, the mining industry in the United States released 2.8 billion pounds of toxic pollutants. As the largest polluter of any industry that year, mining made up 45% of all chemical releases in the United States according to the U.S. Environmental Protection Agency's Toxics Release Inventory (D. Mattson, 2005). Similar, if not worse, levels of contamination can be expected to occur when mining takes place in even less-regulated countries. A sampling of Peru's long history with mining and resulting conflict is discussed in Box 1.9.

Fr. Marco Arana, a leading Peruvian advocate against mining abuses recalls, "When [Newmont Mining Corp.'s] Yanacocha [open-pit gold mine] began its operations, we would only hear about how everyone was happy. The mine was going to bring jobs, improve roads. No one thought much about the inevitable collisions."

*J. Perlez and L. Bergman 2005*

**Box 1.9 Peru: Mining Plus Contamination Equals Violence**

"Before our struggle was for land, now it's for water!" shouted campesino leader Félix Llanos during a road blockade in the northern Cajamarca department in Peru, home to Latin America's largest gold mine: Yanacocha. The Yanacocha mine is a 251-square kilometer open pit mine located eighteen kilometers from the town of Cajamarca. The U.S.-based Newmont Mining Corporation had already leveled five mountains, and had set its sights on its sixth target, Mount Quilish. This was derailed in 2004 after a two-week protest and road block in Cajamarca. The community's water supply source was threatened by the proposed mining expansion. Ultimately, the Minister of Energy and Mines was forced by the social upheaval to withdraw the company's Mount Quilish mining permit (Salazar, 2007).

In watersheds located below the mining operation, concentrations of aluminum, arsenic, and lead above international limits for drinking water for animals were found. The rivers' water volume has also decreased compared to past years. Noting that the lack of water is one of the greatest factors in these conflicts, José de Echave of the NGO CooperAcción notes, "Mining has become a great competitor of a resource that is running out." Local environmental activists claim and independent environmental audits show that the mining operations, which use large quantities of dilute cyanide solutions, have contaminated the water sources (Salazar, 2007).

The Peruvian Environmental Health Office has declared that mining companies have polluted 30% of Peru's coastal rivers, all of which rise in the Andes where extractives industries exist. According to the Ombudsman's Office, there were 89 cases of water contamination reported in the country in the first six months of 2007, and of the 35 cases of social conflicts registered in Peru during the month of June 2007, 16 were linked to water and mining (Salazar, 2007). Community leaders and environmental activists have been assassinated. Numerous others have received death threats, including a local Catholic priest (Oxfam America, 2007). Such death threats and killings of activists who challenge unsustainable mining practices occur repeatedly throughout the world.



## PRINCIPLES FOR WATER AND COOPERATION

Water is not only a source of division. Water also connects people. Mutual needs to share water provide opportunities to forge peaceful cooperation between societal groups. In fact, it will be shown that instances of water cooperation—on the interstate as well as intrastate levels—far outnumber instances of water conflict.

Despite the prevalence of water conflict throughout the world, the potential for water to bring neighboring parties together to achieve mutually beneficial results is immense. This chapter is intended to equip the development practitioner with essential principles for peacebuilding and water valuation. Some of these principles have been codified in international agreements, which advocate water's role as a positive force in peaceful coexistence.

CRS taps its peace-oriented Catholic roots to provide a social and ethical basis for decisions related to the equitable use of water. Likewise, many faith traditions are currently making important contributions to guiding the development practitioner toward promoting more sustainable, lasting, water-focused relationships, both between peoples and between humankind and the natural world. The world's indigenous peoples are making an important contribution to this shift. Their understandings and attitudes are now beginning to be tapped as time-tested approaches to promoting water cooperation.

Another historically excluded voice that is beginning to be incorporated into water-related decision-making processes is that of women. No other segment of the population is so burdened with the daily toil of collecting and using water, while at the same time being so consistently excluded from water-related decision-making. In promoting peace through water, the development practitioner needs not only to heed the voice of women, but also to find creative ways to bring female leaders to the decision-making table.

The latter part of this chapter presents an introduction to United Nations' statements regarding water, including recently articulated recommendations on how to implement the increasingly acknowledged concept of the basic "human right to water." International humanitarian law intended to govern issues pertaining to water during periods of warfare, including the Geneva Conventions, are also touched upon.



Photo by Braulio Rojas, Suma Jajma, 2007. Reprinted with permission.

*"Water is life! Now that we have water and electricity in our homes, hopefully our children will stay here instead of leaving for the city," this elderly man from the community of Ichura, Bolivia, explained. Each family contributed manual labor and half a month's income (\$15) toward construction materials, which were coupled with budgeted municipal funds and foreign donations to install a spring-fed, gravity-driven community drinking water system with 45 household tapstands.*

## CRS Peacebuilding Principles and Integral Human Development

“For water users living in poverty, the enormous hardship faced due to water supplies being neither sufficient nor safe is rapidly becoming a right to life issue.”

*Pontifical Council for Justice and Peace  
2003*

Three major themes related to Catholic peacebuilding:

No peace without justice.

No peace without reconciliation.

No peace without integral human development.

*CRS 2000*

Peacebuilding involves overcoming incompatibilities that lead to conflict. As will be seen, constructive action by the international development community can help parties in conflict move toward mutually beneficial understandings.

It is helpful to recall that for parties in conflict:

- Compromise is more likely when both sides believe they have more to lose than to gain from continuing the conflict.
- Conflict wanes or ends when one side imposes its will, or when both sides come to an agreement.

As an organization committed to incorporating the promotion of lasting, just peace into its development programming, CRS has identified what it believes are key principles of peacebuilding. Peacebuilding:

- Responds to the root causes of violent conflict, including unjust relationships and structures, in addition to addressing its effects and symptoms.
- Is based on long-term commitment.
- Uses a comprehensive approach that focuses on the grassroots while strategically engaging actors at middle-range and top levels of leadership.
- Requires an in-depth and participatory analysis.
- Provides a methodology to achieve right relationships that should be integrated into all programming.
- Strategically includes advocacy at local, national, and global levels to transform unjust structures and systems.
- Builds upon indigenous, non-violent approaches to conflict transformation and reconciliation.
- Is driven by community-defined needs and involves as many stakeholders as possible.
- Is done through partners who represent the diversity of our workplaces and share common values.
- Strengthens and contributes to a vibrant civil society that promotes peace.

## Integral Human Development

A helpful paradigm for guiding the process of managing water-related conflict is the CRS Integral Human Development (IHD) framework (Heinrich, Legee, and Miller 2009).

CRS notes that the concept of IHD is central to Catholic social teaching, defining it as “development that promotes the good of every person and the whole person; it is cultural, economic, political, social and spiritual.” This emphasis on wholeness and integration is the meaning of “integral.” The IHD process “enables people to protect and expand the choices they have to improve their lives, meet their basic human needs, free themselves from oppression, and realize their full human potential” (CRS, 2004, p. 52). The five key component areas of IHD are:

**Outcomes** (desired and actual) are goals, aspirations and objectives that guide people in the decisions they make regarding their families, livelihoods, and communities.

**Strategies** are the variety of initiatives employed by people to realize their desired outcomes.

**Assets** are the resources—human, spiritual, physical, social, natural, political, and/or financial—that people draw upon to make their strategies work.

**Structures and Systems** are forces—legal, market, political and/or socio-cultural—that organize and regulate a person’s or society’s behavior.

**Shocks, Cycles and Trends**, otherwise known as the vulnerability context, are the external risks and opportunities—of a large-scale event (e.g., an earthquake) or of a change that occurs slowly over time—which influence all the other areas of the conceptual framework.

The CRS Integral Human Development conceptual framework is presented in Figure II.1.



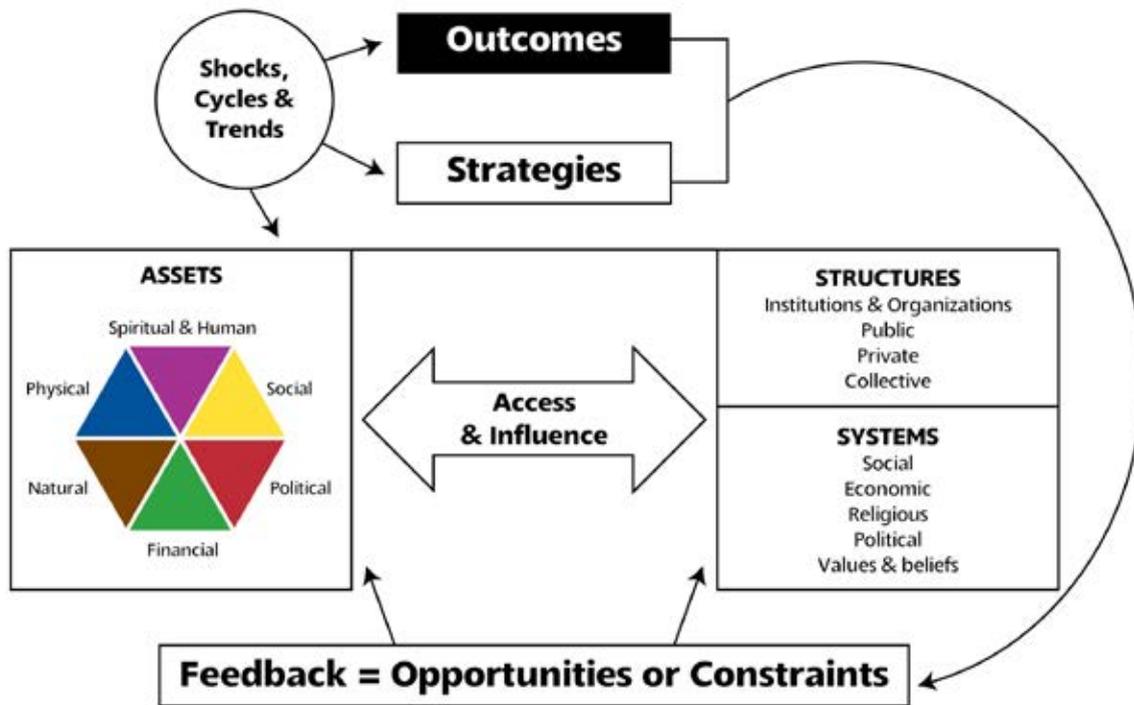


Figure II.1. The CRS Integral Human Development Conceptual Framework

Recognizing that the IHD conceptual framework can appear confusing at first, CRS distills this approach into three simple questions, using the palette of key terms laid down above:

1. What are the people's desired and actual outcomes?
2. What strategies are they using to reach these outcomes?
3. How do their assets, the structures, and systems in their community, and the shocks, cycles, and trends in their environment help or hinder the strategies they are using to achieve their desired outcomes?

If the IHD conceptual framework is used before, during, and after a project, the work of development practitioners in promoting change in each of the above-mentioned five component areas of IHD can be monitored and evaluated. The importance of the feedback loop (monitoring and evaluation) cannot be overstated.

## Catholic Social Teaching Principles Applied to Water

In July 2008, Cardinal Renato Martino, head of the Pontifical Council for Justice and Peace, delivered Pope Benedict XVI's message to the International Exposition on Water and Sustainable Development in Spain:

*Water is "a universal and inalienable right" for all people and an "essential and indispensable gift" from God. Its use must be guided by "reason and solidarity," taking into account the "growing and perennial needs of people who live in poverty." (C. Glatz, 2008)*

This built upon an earlier address by the Holy See at the Third World Water Forum in Kyoto, 2003. There the Pontifical Council for Justice and Peace spoke about applying Catholic Social Thought to the critical issue of water:

- *Right to water:* Access to clean and sufficient water supply is a human right.
- *Privatization and the common good:* There are inherent dangers associated with viewing water as just another commodity, to be sold in the marketplace.
- *The Integrity of Creation:* A Christian is called to promote and protect the environment, not only for the benefits of the human community, but for the integrity of the whole of creation.
- *The Prevention Principle:* Prevention of harm is the best method of environmental protection and pro-poor strategies.
- *The Precautionary Principle:* Decisions and actions must be taken to avoid the possibility of serious or irreversible environmental harm, even where scientific knowledge is insufficient or inconclusive.
- *The Polluter Pays Principle:* Those causing harm should pay compensation to victims and pay for redress of environmental damage caused.
- *Righteous indignation:* Knowledge of environmental degradation and exclusion from access to water, along with the dangers inherent in its commercialization in favor of the privileged, should elicit a just indignation among the followers of Jesus.

"Jesus Christ, having declared himself 'Source of Living Water' that springs forth eternal life; calls us to administer water with justice and equity in order to quench the thirst of all!"

*Bolivian Episcopal Conference 2003, Art. 110*

## Indigenous Perspectives on Water

“Water and humans are living beings co-existing in the ‘Pacha’ —Aymara for ‘Sacred Universe.’ To recreate life in abundance, an integral, subject to subject relationship between human beings and water is required.”

*Calixto Quispe Huanca 2006*

In recent years, a shift in perspective has begun to take place among the world's leading authorities on water. This shift involves the opening of spaces for indigenous voices to contribute towards the search for effective water governance approaches. Indigenous perspectives tend to place water and other natural resources within a spiritual framework that strives for greater harmony with the divine, with all of creation, and within humanity. Many indigenous leaders, however, still see their inclusion in the mainstream deliberations as little more than mere acts of courtesy, rather than substantial acknowledgments of the wisdom of peoples who have sustainably governed the use of water for millennia.

The Indigenous Water Initiative (2003) articulates this frustration:

- *Indigenous cultural and spiritual understandings about water are misunderstood or simply ignored by the dominant Western societies.*
- *Indigenous communities are not included meaningfully in water policy and planning processes.*
- *Customary access and rights to water are seldom recognized by the state authorities that now control indigenous areas.*
- *Water bodies that are critical to indigenous people's cultural and physical well-being are being polluted by outside forces beyond their control.*

As just one example of the values that indigenous peoples embrace which could help inform more equitable and sustainable—and thus less conflict-ridden—modern water governance practices, Box II.1 provides a synopsis of the place of water in the cosmivision of the Andean people.

**Box II.1 Water in the Andean Cosmivision**

Excerpts from CONDESAN, *The Andean Vision of Water* (2003), pp. 3–4.

*For Andean peoples, water is much more than a hydric resource.*

**Water as a Living Being**

*Water is a living being, the provider of life and animation for the universe. One dialogues with water, one treats it with affection, one nurtures it. . . .*

**Water as the Basis of Reciprocity and Complementarity Rather than Opposition**

*Water allows the integration of living beings, the articulation of nature and human society. It is the blood of the earth and of the Andean universe. . . . It orders the life of individuals, presents difference not as opposition but as complementarity, and facilitates the solution of conflicts on the basis of community agreements.*

**Water as Universal and Community Right**

*Water is “everybody’s and nobody’s”. It belongs to the earth and to living beings, including human beings. It is distributed equitably according to needs, customs, and community patterns and according to its cyclical availability.*

**Water as an Expression of Flexibility and Adaptability**

*Water behaves according to ecosystems, circumstances, and opportunities without following rigid norms. . . . Its sustainable use implies the generation and application of knowledge and skills obtained during centuries, as well as the construction of a hydraulic infrastructure that permits harvesting and distributing water on the basis of efficient community management.*

“Mechanisms for fair use must be formulated that respond to the needs of nature and of the human communities, prioritizing the rights to subsistence, food sovereignty and local development.”

CONDESAN 2003, p. 5

Indigenous peoples have much to contribute to the technological and social systems of water management.<sup>1</sup> They bring to the table time-tested approaches to transforming conflicts that arise out of competing water interests. Box II.2 shows what Aaron Wolf, one of the world’s leading experts on international water conflicts, found when he investigated methods of water conflict resolution among indigenous peoples who have historically inhabited arid regions.

<sup>1</sup> The *Indigenous Peoples Kyoto Water Declaration*, presented to the Third World Water Forum held in Kyoto, Japan, in March 2003, provides additional insights into indigenous perspectives regarding water.

**Box II.2 The Berbers, the Bedouin, and Conflict Transformation Lessons Learned from Indigenous Peoples Living in Arid Lands**

*Excerpts from A. Wolf, "Indigenous Approaches to Water Conflict Negotiations and Implications for International Waters" (2000).*

*The indigenous peoples of two drylands regions—the Berbers of the North African High Atlas Mountains and the Bedouin of the Negev Desert in southern Israel—have faced conflicts arising out of water scarcity and water fluctuations for centuries. Lessons learned from these indigenous approaches to water conflict transformation that are applicable to modern problems include:*

- 1. Allocate time, not water. Berber water management quantifies water in units of time rather than in units of volume. This method allows for local management of a fluctuating supply, and provides a means for a water market without storage structures.*
- 2. Prioritize different demand sectors. Berbers and Bedouin prioritize demand differently, but each provides a hierarchy of importance. This allows for less important uses to be cut off throughout a valley during low flow regimes, rather than entire down-stream villages, and protects investments in infrastructure... Highest priority is for drinking water for humans, followed by drinking water for animals—both of these uses are sacrosanct and neither may be denied anyone for any reason at any time. The next priority is irrigation water which flows through the canal system. Water to mills is the next priority.*
- 3. Protect downstream and minority rights. Berbers allow only traditional, piled rock diversion structures. The use of modern materials for a canal intake such as artificial pumping or cement is quite simply forbidden by regional law. Through their "inefficiency," these traditional structures allow for flow to continue downstream, while Bedouin concepts of equity address honor and pride, as well as right and wrong.*
- 4. Alternative dispute resolution. Each group has sophisticated mechanisms of dispute resolution, from which modern international management might benefit. Techniques include "shared vision" exercises and recognition of a defined water authority. For example, within each Berber village, an a'alam or naib is chosen to manage the irrigation schedule and to resolve internal disputes. Within the Bougmez and M'goun valleys, this authority is chosen generally through their ability to resolve disputes equitably, and rotates from family lineage to family lineage.*
- 5. The "sulha." Both Berbers and Bedouin follow this Islamic practice of a ritual ceremony of forgiveness, which consists of private, often mediated, negotiation of redress between the affected parties, followed by a public declaration of forgiveness and, usually, a festive meal. Once the ceremony is performed, the dispute may not be discussed—it is as if it never occurred.*

## Gender and Water

“There isn’t a single development issue that isn’t a women’s rights issue,” concludes Jessica Woodroffe of ActionAid (A. Penketh, 2007). Transforming water conflict is no exception. Penketh’s study shows that women face particularly unremitting and insidious structural violence that robs them—and all of us—of precious knowledge and energy:

Women, are one-half of the world’s population, yet make up 70% of the one billion people living in extreme poverty. Women work two-thirds of the world’s working hours, yet earn only one-tenth of the world’s income. Women produce one-half of the world’s food, yet own less than two percent of the land. And when 43 million girls in the world are still not able to go to school—“not seen worth the investment,” or busy collecting water or firewood or doing other domestic chores, it is sadly not surprising that today two-thirds of the world’s 800 million illiterate adults are women.

Confronting structural violence towards girls and women must be incorporated into water development efforts of a peacebuilding paradigm. While suffering under the yoke of gender-based oppression, women are not just victims; rather, they are also found at the forefront of promoting more just social and economic structures leading to their own liberation and that of all marginalized populations.

“Thanks to the new Honduran national law requiring at least 30% female participation in public leadership positions, our community water entity’s once all-male board of directors is now comprised of two-thirds women, because of a simple change in the statutes allowing spouses of the officially registered users to be eligible for office.”

*María Luisa Ventura, president of Jesús de Otoro’s water entity, JAPOE.*

“Women have an important role to play in promoting a new attitude towards the use of water resources, based not only on technical knowledge, but also on cultural and ethical values. This new attitude would contribute to building a more just and peaceful world. . . .”

*Aureli and Brelet 2004, p. 32*

### Box II.3 Water Decision-Making: Increased Female Participation, Increased Social Equity and Effectiveness.

*Excerpts from Peace Corps, Honduras, Equidad de Género y Calidad de Agua (Gender Equity and Water Quality) (2004).*

*Typical household responsibilities of rural women are much more water-intensive than those of rural men, up to 70 times more. Yet, women are frequently excluded from water-related decision-making processes that impact their lives and those of their children. This marginalization of women’s voices in water-related matters exacerbates structural violence.*

*Aware of the need to approach any culture respectfully, many peacebuilding water development practitioners are emphasizing gender equity in their programming. But what exactly does “gender equity” mean? First, what it is not:*

- *Not just equal numbers of men and women, boys and girls in activities.*
- *Not that the needs of both men and women are to be attended to in the same manner.*
- *Not that men and women are identical.*

*What it does mean:*

- *The rights, responsibilities, and opportunities of any given person should not depend on whether that person was born a man or woman.*

*In terms of water-related decision-making, the benefits of increased participation of women include:*

- *Increased attention to the needs of women, boys, and girls.*
- *More transparent social oversight over, and more equitable benefits from, water resources.*
- *Tapping into the vast knowledge, experiences, and wisdom of women.*
- *A more peaceful society based on social justice.*

For addressing the root causes of structural violence against women through gender-informed water programming, Niala Maharaj et al. (1999) recommend that the following strategies be employed at the project/local/community level:

- *In-depth gender-sensitive consultation processes that allow participation of both women and men in decisions regarding location of water installations, technology, and price.*

- *Care in ensuring gender balanced participation in management at community levels.*
- *Capacity building so that women are able to perform managerial functions. This includes the development of skills in financial management, decision-making, community participation, leadership, confidence building, and communications.*
- *Gender training for both men and women at local levels, so that men understand and support the changes taking place in social organization. This requires also training of trainers, both men and women.*
- *Capacity building to equip women to perform technical functions.*
- *Strategies to ensure that both women and men share the benefits of changes in water supply management.*
- *Gender stratification in research and planning. Most current investigations of users and their needs fail to collect data differentiated along gender lines. This results in faulty assessment of levels of need and patterns of need. (pp. 31–33)*

Emergency situations involving the needs of internally displaced persons or refugees as a result of natural disasters or armed conflict pose a particular risk for the most vulnerable segments of society, especially women and children. A sampling of key gender-based water and sanitation actions recommended by the Inter-Agency Standing Committee for response to man-made and natural disasters is included in the final section of this text, “Applications of Peacebuilding Methods to Conflict Scenarios.”



Photo by Paul Jeffrey/ACT-Caritas.

*Women and girls fetch water in the Hassahissa IDP Camp near Zalingei, Sudan, 2005.*

## United Nations Declaration of Water as a Human Right

In November 2002, access to water was declared an essential human right with the adoption of General Comment No. 15 by the United Nations Committee on Economic, Social and Cultural Rights (UN CESCR). As a result, UNESCO notes that,

The [close to 160] countries which have ratified the International Covenant on Economic, Social and Cultural Rights (ICESCR) are now compelled to progressively ensure that everyone has access to safe and secure drinking water, equitably and without discrimination (p. 3).

Greater access to this element that is essential for life should lead to reduced conflict. But what exactly is meant by a “right to water”? Table II.1 is helpful in that regard, and important for promoting water-related development programming.

Table II.1 Misconceptions and Clarifications Regarding the Right to Water and Sanitation.

*Excerpts from Centre on Housing Rights and Evictions, AAAS, SDC, and UN-HABITAT, Manual on the Right to Water and Sanitation. Box 2.1, 2007.*

| Misconception   | Clarification  |
|---|--|
| The right allows for unlimited use of water.  | The right entitles everyone to sufficient water for personal and domestic uses (approximately 50 liters per person per day minimum) and is to be realized in a sustainable manner for present and future generations. Water and sanitation services need to be affordable for all. |
| The right entitles everyone to a household connection.  | Water and sanitation facilities need to be within, or in the immediate vicinity of, the household, and can comprise facilities such as wells and pit latrines.   |
| The right to water entitles people to water resources in other countries.                         | People cannot claim water from other countries. However, international customary law on transboundary watercourses stipulates that such watercourses should be shared in an equitable and reasonable manner, with priority given to vital human needs.                             |
| A country is in violation of the right if not all its people have access to water and sanitation. | The right requires that a State take steps, based on the maximum available resources, to progressively realize the right.  |

As for obligations imposed upon State parties, the CESCR has stated that, as with all human rights recognized by the United Nations, States have the obligation to *respect, protect, and fulfill* the human right to water. In its *Manual on the Right to Water and Sanitation*, Centre on Housing Rights and Evictions (2007, p. 15) applies these stipulations to the right to water:

The **obligation to respect**, requiring State parties to refrain from interfering directly or indirectly with the enjoyment of a human right.

Examples:

- Refraining from arbitrarily interfering with customary or traditional arrangements for water allocation.
- Unlawfully diminishing or polluting water resources.

The **obligation to protect**, requiring State parties to prevent third parties (including individuals, groups, corporations, and other entities under their jurisdiction) from interfering with the enjoyment of a right. Example:

- Adopting effective legislative and other measures to prevent third parties from denying equal access to water or polluting or inequitably extracting from water sources.

The **obligation to fulfill**, requiring State parties to facilitate, promote, and provide this human right to water —especially when individuals or groups are unable, for reasons beyond their control, to realize the right themselves by the means at their disposal. Examples:

- Facilitating, by taking positive measures to assist individuals and communities to enjoy the right to water.
- Promoting, by ensuring that there is appropriate education concerning the hygienic use of water.
- Protecting, by implementing measures to safeguard water sources and incorporate methods of minimizing wastage.

The ICESCR imposes minimum core obligations on State parties to ensure, at the very least, the achievement of basic levels of the human right to water, as described in Box II.4.

“The human right to water is indispensable for leading a life in human dignity. . . . Water, and water facilities and services, must be affordable for all.”

*U.N. Committee on Economic, Social and Cultural Rights 2002*

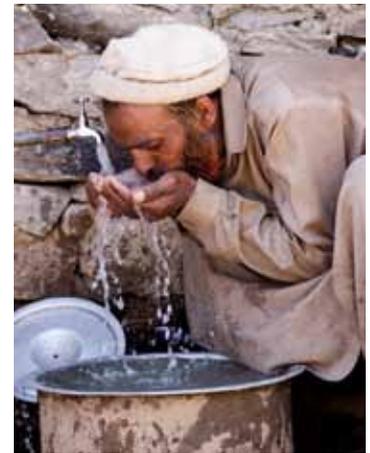


Photo by Jim Stripe/CRS.

Duriaman, age 45, takes a drink of water from the new water system in Kund I village, Pakistan, built in 2006 with assistance from CRS in the Siran Valley near Mansehra, Northwest Frontier Province, Pakistan, 2006. His family used to get water from a spring which was a forty-minute walk from his house. When the October 2005 earthquake hit his Pakistani village, it turned the spring water muddy, making it unfit to drink. CRS worked with the village to plan and build a water system that now brings clean drinking water directly into the village.

### Box II.4 Water as a Human Right: Minimum Core Obligations for State Parties According to U.N. General Comment No. 15.

Excerpts from U.N. CESCR, "General Comment No. 15 The Right to Water (Articles 11 and 12 of the International Covenant on Economic, Social and Cultural Rights, para. 37) (2002).

1. To ensure access to the minimum essential amount of water, that is sufficient and safe for personal and domestic uses to prevent disease.
2. To ensure the right of access to water and water facilities and services on a non-discriminatory basis, especially for disadvantaged or marginalized groups.
3. To ensure physical access to water facilities or services that provide sufficient, safe and regular water; that have a sufficient number of water outlets to avoid prohibitive waiting times; and that are at a reasonable distance from the household.
4. To ensure personal security is not threatened when having to physically access water.
5. To ensure equitable distribution of all available water facilities and services.
6. To adopt and implement a national water strategy and plan of action addressing the whole population; the strategy and plan of action should be devised, and periodically reviewed, on the basis of a participatory and transparent process; it should include methods, such as right to water indicators and benchmarks, by which progress can be closely monitored. The process by which the strategy and plan of action are devised, as well as their content, shall give particular attention to all disadvantaged or marginalized groups.
7. To monitor the extent of the realization, or the non-realization, of the right to water.
8. To adopt relatively low-cost targeted water programs to protect vulnerable and marginalized groups.
9. To take measures to prevent, treat and control diseases linked to water, in particular ensuring access to adequate sanitation.

The U.N. General Comment No. 15 provides guidance for priority-setting in allocating water among competing uses:

*Water is required for a range of different purposes, besides personal and domestic uses, to realize many of the Covenant rights. For instance, water is necessary to produce food (right to adequate food) and ensure environmental hygiene (right to health). Water is essential for securing livelihoods (right to gain a living by work) and enjoying certain cultural practices (right to take part in cultural life). Nevertheless, priority in the allocation of water must be given to the right to water for personal and domestic uses. Priority should also be given to the water resources required to prevent starvation and disease, as well as water required to meet the core obligations of each of the Covenant rights. (U.N. CESCR, 2002, para. 6)*

U.N. General Comment No. 15 also refers to the Plan of Implementation of the World Summit on Sustainable Development (WSSD), where States committed to:

*Develop integrated water resources management and water efficiency plans to: ... (c) Improve the efficient use of water resources and promote their allocation among competing uses in a way that gives priority to the satisfaction of basic human needs and balances the requirement of preserving or restoring ecosystems and their functions, in particular in fragile environments, with human domestic, industrial and agriculture needs, including safeguarding drinking water quality. (U.N. WSSD, 2002, para. 26c).*

Efforts by the international community to advance human and civil rights through United Nations treaties are, however, blocked when nations fail to ratify the treaties. The United States, while a leader in composing the 1948 Universal Declaration of Human Rights, for example, has been reluctant to ratify many U.N. treaties in the years since then including the *International Covenant on Economic, Social and Cultural Rights (ICESCR)* in force since January 3, 1976 and ratified by 159 countries, but not by the United States.

## Millennium Development Goals

In September 2000, Millennium Development Goals (MDGs) were agreed to by all of the world's countries and leading development institutions. These goals constitute a blueprint for galvanizing a global partnership to more effectively meet the needs of the world's impoverished through a series of time-bound targets ending in 2015. The eight MDGs are:

1. *Eradicate extreme poverty and hunger*
2. *Achieve universal primary education*
3. *Promote gender equality and empower women*
4. *Reduce child mortality*
5. *Improve maternal health*
6. *Combat HIV/AIDS, malaria, and other diseases*
7. *Ensure environmental sustainability*
8. *Develop a global partnership for development*

The third target under the goal of "Ensuring environmental sustainability" is arguably the most relevant to the focus of this text, since it seeks to mitigate structural violence through water and sanitation programming:

*Halve, [between 1990 and] 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation.*

Recent data on the global progress towards meeting this MDG target for drinking water and sanitation show that limited progress has been made in both sectors, although less so in terms of sanitation (WHO/UNICEF, 2008). Key report findings include the following:

- Access to sanitation in the developing world increased from 41% coverage in 1990 to 53% in 2006 (p. 6). At this rate, the world is not on track to meet the MDG sanitation target for 2015, since 2.5 billion people still lack access to improved sanitation (piped sewers, septic tanks, latrines, etc.), including 1.2 billion who have no facilities at all (p. 2). Sub-Saharan Africa and Southern Asia are identified as areas of particular concern.
- As for drinking water supply, current trends suggest that the world is on track to meet the MDG target (p. 24). Data from 2006 show that 87% of the world's population uses drinking water from an improved source, an increase of 1.6 billion people since 1990. For the first time, the number of people without improved drinking water has dropped below one billion, to 884 million people (p. 23). While improved drinking water coverage in Sub-Saharan Africa continues to fall short of the level achieved in other regions of the world, access has increased from 49% in 1990 to 58% in 2006. This translates into an additional 207 million Africans now using safe drinking water during that time period.

## Water and Warfare: Provisions of International Humanitarian Law Protecting Water

### During Armed Conflict

In cases of violent conflict between states, international humanitarian law has been established to regulate the conduct of hostilities and ensure the protection of war victims. Such international humanitarian law, based on various texts including the 1907 Hague Regulations and 1949 Geneva Conventions, is intended to protect people who are not or are no longer taking part in the hostilities, and to restrict the methods and means of warfare. Among many other things, international humanitarian law prohibits, directly or indirectly, the immoral use of water as a military weapon and target in times of war. (Boisson, Tignino, Boutruche, 2003).

In the aftermath of the devastating environmental impact of the use of chemicals and defoliants by the United States in the Vietnam War, two additional Protocols to the 1949 Geneva Conventions were adopted in 1977. With them came additional legal safeguards for protecting water in times of armed international conflict (UNESCO, 2003):

- Protocol I (Art. 54) prohibits, “whatever the motive,” the attacking, destroying, removing of “objects indispensable to the survival” of civilian population, such as “drinking water installations and supplies and irrigation works.”
- Protocol I (Art. 56) prohibits attacks against “works and installations containing dangerous forces, namely dams, dykes and nuclear electrical generating stations.”

A frequent violation of Protocol I to the Geneva Conventions continues to be the targeting by military campaigns of electrical power systems, which results in the cutting off of an urban population’s access to water; as water pumps and treatment facilities are unable to operate. Boisson et al. note that another controversy involves the impact on human health and the environment of using depleted uranium in armor-penetrating military ordinances, specifically the effect of depleted uranium dust on water, which has been cited as a concern by the World Health Organization (2001, p. 8).

Although Protocol I was ratified by more than 159 states, politically strong countries including the United States were opposed to its ratification, preventing the widespread application of these laws to date. Such a protocol to the Geneva Convention still carries considerable moral weight during war, and serves as a means for demanding more humane behavior in times of armed conflict between states.

Moreover, Boisson et al. argue that since human rights treaties are commonly held to apply during armed conflicts, the 2002 General Comment No. 15 on the Right to

“In times of violent conflict, non-combatant communities are like leaking buckets. Their resources—human capacities, social fabric and cultural values—are being depleted, often the result of deliberate targeting by armed groups.”

*Wessells and Ager 2008*

Water, adopted by the United Nations Committee on Social, Economic and Cultural Rights, converges with international humanitarian law in establishing a holistic approach to ensure protection of water in times of war. General Comment No. 15 affirms the obligation of states to refrain from “limiting access to, or destroying, water services and infrastructure as a punitive measure, for example, during armed conflicts in violation of international humanitarian law” (UN CESCR, 2002, para. 21).

### During Military Occupation

The Hague Regulations and the Fourth Geneva Convention are also two principal sources of international law that pertain to military occupation. Article 55 of the Hague Regulations establishes that an occupant cannot claim ownership of public properties. It can use such property according to the “usufructuary” principle, but it must protect the “capital” of the property. Thus, in terms of water resources, over-exploitation in which a renewable resource becomes a non-renewable resource (e.g. excessive groundwater extraction leading to a permanent degradation of the aquifer) sets the absolute usufruct limit for military occupation.

Boisson et al. (2003) note that this article limits the occupier to using water resources only for the purposes of the occupation itself. Using its water to promote the occupying power’s own economy, or to pump it into the home country, is forbidden. The situation of the Palestinian-occupied territories and the extraction of its water resources to Israel, as described in Box I.4, is a clear violation of Article 55.

Boisson et al. summarize the Hague Regulations mandate in this way:

*The provisions of the Hague Regulations can provide a detailed and nuanced legal framework upon which to examine the responsibility of an occupying power in relation to the freshwater resources of the occupied territory (p. 4).*

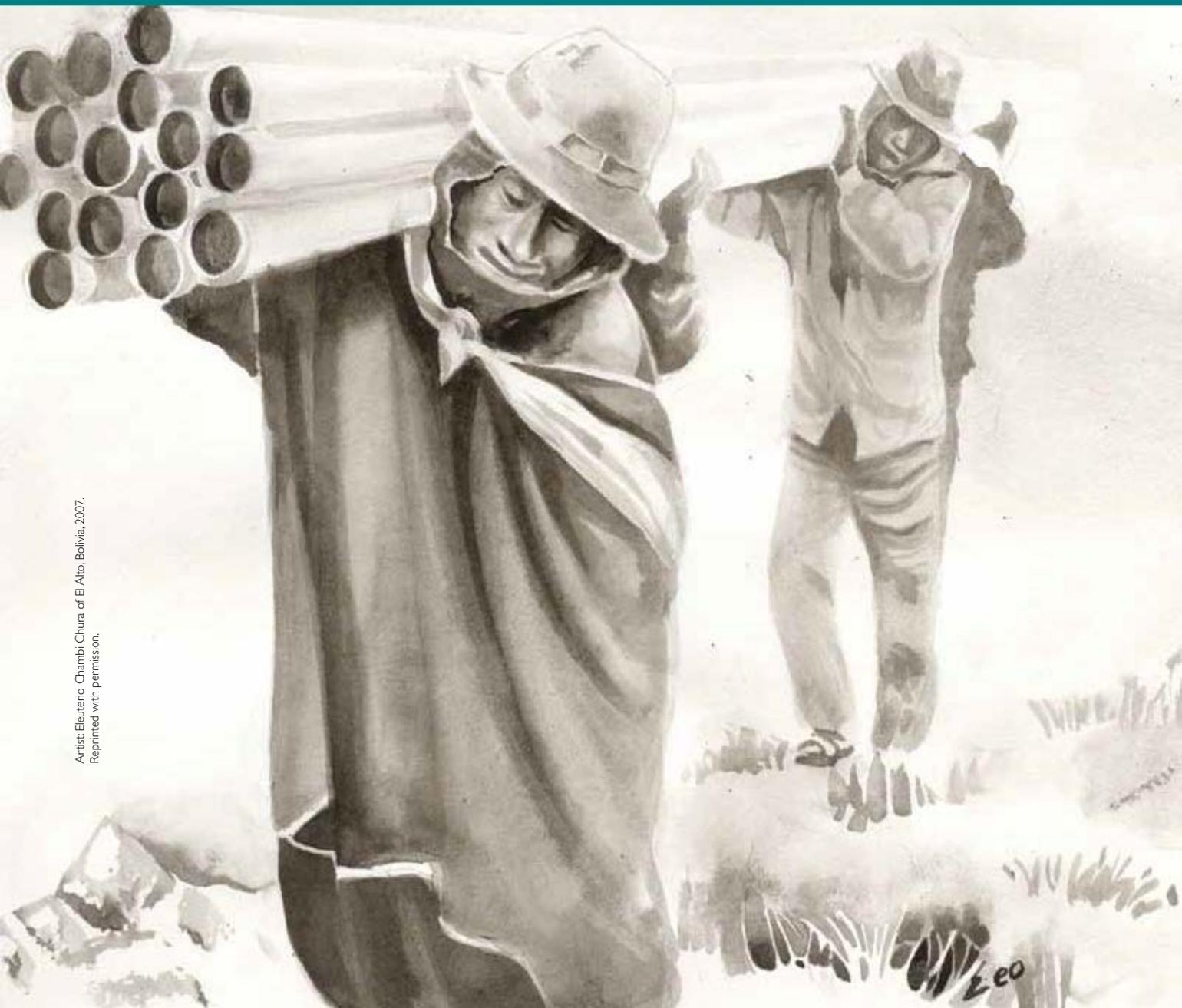
By linking water to the concept of property, Article 53 of the Fourth Geneva Convention can be interpreted to provide additional legal backing for challenging a military occupation’s negative impact on the local water resources. Article 53 states:

*Any destruction by the Occupying Power of real or personal property belonging individually or collectively to private persons, or to the State, or to other public authorities, or to social or cooperative organizations, is prohibited, except where such destruction is rendered absolutely necessary by military operations.*

## Part 2

### PUTTING PEACEBUILDING PRINCIPLES INTO WATER PRACTICE

*Shared sacrifice brings shared benefits. Here members of the Bolivian community of Pucara Pajchani make the long trek to a spring carrying PVC pipe that will soon bring safe water to their homes.*



Artist: Eleuterio Chambi Chura of El Alto, Bolivia, 2007.  
Reprinted with permission.





Traditionally, water development practitioners have been concerned with material infrastructure—“tubes and tanks.” While there certainly continues to be an enormous need for implementing physical water-related improvements throughout the world, the need to construct “social infrastructure” capable of handling emerging water-related conflicts has emerged as of paramount concern. Emphasis on strengthening local water-related social infrastructure vastly increases the long-term sustainability of any water resources initiative. Ken Hackett, President of CRS, notes (2000):

*A great number of private voluntary organizations see their traditional paradigm of moving assistance through a continuum, from relief to rehabilitation to development, as patently insufficient. They realize that if they are not consciously engaged in a process that integrates reconciliation and the promotion of justice in their programs, nothing lasting will be accomplished. (pp. 272–73)*

It is important that NGO practitioners on the ground understand the water-related conflict dynamics and risks in the communities and regions they intend to serve. Framing water development efforts within a peacebuilding paradigm increases conflict sensitivity on the part of development practitioners, and facilitates conflict transformation and violence prevention for the parties in dispute. Yet prior to focusing outward on the much-needed task of incorporating peacebuilding principles into water programming, a good look inward may be in order for practitioners.

“If the underlying cause of poverty and underdevelopment in a region is conflict and violence, then investments undertaken solely to promote poverty relief and infrastructure development will lead to little more than ‘band-aid’ solutions. Donor agencies need to adopt a broader strategy that combines and integrates conflict resolution and development aid.”

*Lubarr 2005, p. 13*

## Points for Reflection

“In addition to delivering goods and services, aid delivers messages. The content, style, and modes of aid communicate values, which can also reinforce, prolong, and exacerbate conflict or reinforce and support capacities for peace.”

*Anderson 1999, p. 55*

## Ethical Obligations

An emphasis on ethics is especially important when incorporating peacebuilding into water-related programming. As Nick Smith (2002) writes:

*Not knowing what constitutes best practice is incompetence. Knowing what best practice is, but not knowing how to achieve it, may be inexperience. Knowingly not following best practices, when one knows how to achieve it, is unethical.*

Cheyenne Church and Mark Rogers (2006, p.190) note that the ethical obligations required of practitioners in the design phase of peacebuilding-driven water projects include:

1. *Involving the parties to a conflict in determining the change that will satisfy their respective interests.*
2. *Considering any possible negative ramifications that may occur as a result of a project and doing everything possible to eliminate them.*
3. *Developing projects which maximize the opportunities for positive change.*
4. *Establishing accurate indicators for later gauging the project's relative success.*

While the ICRC/IFRC/NGO Code of Conduct (1994) seeks to guard NGO standards of behavior during disaster response programs, these same principles are applicable as well to guiding approaches and attitudes involved in disaster preparedness, transitioning out of disaster relief, and, to a very large degree, longer-term sustainable development. The key principles articulated in the Code of Conduct include:

1. *The humanitarian imperative comes first.*
2. *Aid is given regardless of race, creed or nationality of the recipients and without adverse distinction of any kind. Aid priorities are calculated on the basis of need alone.*
3. *Aid will not be used to further a particular political or religious standpoint.*
4. *We shall endeavor not to act as instruments of government foreign policy.*
5. *We shall respect culture and custom.*
6. *We shall attempt to build disaster response on local capacities.*

## Being the Peace We Strive to Promote

NGO practitioners should carry out ongoing self-examination as members of the international relief and development field. This is because inappropriate interventions at the community levels can lead to conflict, often despite the best intentions. Indeed, in the spirit of humility, as “guest” organizations in foreign host communities, NGOs must continue to be aware of the potential the efforts have to negatively impact the communities they desire to serve. By first humbly adhering to the principle advocated by Mary B. Anderson—“Do no harm” (1996, 1999)—one can proactively take steps to promote peacebuilding and water-related conflict transformation through programming.

On the basis of general experience related to water and development in diverse settings involving actual or potential conflict, CRS has found that it is essential first to be aware of one’s own individual “baggage” as well as the baggage of one’s organization, and ideally “unpack it” prior to attempting to “put in order” other people’s houses. Lessons learned from such experiences suggest the following checklist:

- Do we and our partners take steps to avoid raising undue hopes and expectations?
- Have we allowed ourselves to be aligned with one faction of a community?
- Have our perspectives been shaped by the attitudes toward rural and semi-urban peasants that are prevalent among the urban, professional classes, or, for that matter, among the expatriate community living in areas of privilege?
- Are the funds we receive free of a political agenda promoting one group, region, or political ideology over another?
- Are we placing our organizational or personal gains above the best interest of the communities?
- How well is our own internal conflict handled? How collaborative and participatory is our organizational structure?
- How do we relate to other NGOs in the field? How do we avoid conflict-inducing competition in order to promote a comprehensive development agenda with various actors?
- How well do we know a given community and surrounding area before jumping in? Do we have the knowledge of priority needs, local leaders, tensions, and histories of conflict that will provide us the necessary insight for successful project planning and implementation?

“We must be the change we wish to see in the world.”

*Gandhi*

“To be effective in the humanitarian action and international development fields, we must embrace relationships with the benefiting communities marked by a spirit of accompaniment, deep listening, and an ability to be self-critical.”

*Wessells and Ager 2008*

- How willing are we to make space for local leadership in decision-making within our organization, with our partners, and with the benefiting communities?

Poorly implemented community development projects, especially those involving water infrastructure so essential to a community's well-being, can lead to intense resentment and lasting conflict among community members. If construction materials are inadequate or there is unexpected and costly maintenance of flawed or technologically inappropriate works, community frustrations may flare into open conflict. Inadequate budgets and delays in project implementation too can lead to community members resorting to public acts of civil disobedience.

Role-modeling, mutual respect, and the acknowledgment of beneficiaries as essential partners, both in rights and responsibilities, in any community development project—these are key conflict prevention tools essential to the development practitioner. By building upon lessons learned from their past experience, Mary B. Anderson notes that, “Aid workers can ensure that future aid does not exacerbate or prolong conflict and that it does strengthen connectors and support local capacities for peace” (1999, p. 67).

## Peacebuilding: A Widening of Perspective, An Embracing of Change

*The development aid system knew of the disintegration of Rwandese society; saw the many Tutsis working for aid agencies or partner NGOs being harassed, threatened, or killed; discussed these matters and surely regretted them; but seemingly felt it was outside its mandate or capacity to intervene, that all it could do was to continue business as usual. Thus aid continued to muddle through, trying to make its usual projects work with a faltering government, until the day the genocide began (Uvin 1998, p. 65).*

What would applying peacebuilding and conflict transformation to typical water and sanitation development programming look like? What does this mean for the NGO practitioner accustomed to professionally carrying out the “nuts and bolts” planning, design, and implementation phases for a given water resources development project?

The answer is relatively simple: In the beginning, it involves nothing more than a widening of perspective.

As Cheyanne Church and Mark Rogers (2006) note,

*Peacebuilding is about change. As peace builders, we need to be observant enough to see change when it happens, aware enough to understand how change happens, innovative enough to create change, and strategic enough to create change where it can make a difference. . . . (p. 23).*

To have a real impact on conflict, the same authors conclude:

*Individual/personal change must be translated into actions at the social/political level. Even then, work with more people is not enough if it does not reach key people, while work with key people is not enough if it does not reach more people (pp. 39-40).*

As development practitioners, a key question should be continuously asked, and answered, in striving to follow peacebuilding principles: How do our daily attitudes, motives, and actions foster processes of change among the benefiting populations that can evolve to meet the challenge of actual or potential water conflicts?

If development practitioners take the time, at the outset of water and sanitation projects, to dialogue with stakeholders regarding the potential that each step in the project has for preventing and/or transforming conflict, an attitude of peacebuilding will take root. For each key social and technical task associated with water/sanitation projects, participants can raise strategies that ethically promote change and foster the aims of peacebuilding. The results of this process at the project’s start also make it more feasible to stay focused on peacebuilding goals, by establishing a set of indicators against which development practitioners can periodically “check-in” to help stay on track.

Consider, for example, the opportunities available to articulate “change processes” and/or ethical obligations for each of the key steps in planning, implementing and evaluating a typical water supply project, as presented in Table III. I.

“Go with the people.  
Live with them.  
Learn from them.  
Love them.  
Start with what they know.  
Build with what they have.  
But of the best leaders  
When the job is done,  
the task accomplished,  
The people will all say,  
‘We have done this ourselves.’”

Lao Tsu

Table III.1 Peacebuilding-Guided Water Supply Project Planning and Implementation

| Task   | Peacebuilding “Change Process” and/or Ethical Obligation   |
|--|--|
| Pre-Project “Concept Note” Phase   |  |
| 1. Invitation by the community to funding and implementing organizations to coparticipate in water supply project.   | 1. Persons enduring the “structural violence” of poverty and marginalization must be involved in determining the change that will satisfy their respective interests.  |
| 2. Preliminary visit to community and corresponding local government to determine project’s technical, financial, and social feasibility, while keeping community expectations to a minimum.   | 2. An in-depth and participatory social context analysis is an essential first step toward peacebuilding. This should include research into both intra-community and inter-community tensions and conflicts. |
| 3. Interviews of community members, especially women and children, to assess the current situation and identify the desired outcomes from any potential project.   | 3. Creating space in decision-making for those who have been historically silenced promotes more inclusive and effective programming.  |
| Project Design and Proposal Phases   |  |
| 4. Written, signed agreement among all stakeholders, granting permission for use of water source for the water supply project.   | 4. Proper documentation of agreements reached is a key step in preventing future conflicts.  |
| 5. Water quality analysis performed on the proposed water source.  | 5. Possible negative ramifications of a project must be considered, with appropriate preventive measures taken.  |
| 6. Written, signed commitments that detail the contributions to the project of the community and each benefiting family.   | 6. Peacebuilding is driven by community-defined needs and involves as many stakeholders as possible.   |
| 7. Make explicit the expectations of the design engineer to incorporate community participation into the water system design (e.g., selection of water source(s), routing of water lines during survey phase, identification of families’ homes by name on the plans). | 7. Peace and fostering equity emerges out of a process of breaking down isolation, polarization, division, prejudice, and stereotypes between/among groups.  |
| 8. Stringent review of design calculations, quantities, and budget to meet “standard of care” requirements expected to be exercised by reasonably prudent water sector professionals, thus increasing the likelihood of a successful water project.                    | 8. Projects should be developed which maximize the opportunities for positive change in social relationships.  |

| Task  | Peacebuilding "Change Process" and/or Ethical Obligation  |
|---|---|
| Project Design and Proposal Phases  |   |
| <p>9. Written, signed local government commitment, detailing its cash and in-kind contributions of labor, equipment, and/or materials to the project.</p>   | <p>9. Emphasis should be placed on supporting stable and reliable civil and social institutions that promote democracy, social equity, justice, and fair allocation of resources.</p>           |
| <p>10. A copy of project design proposal made available to each local partner; including the community drinking water committee, local government, and implementing organization(s). The same should occur with the final project report upon conclusion of the project.</p>  | <p>10. Access to information mitigates vulnerability to manipulation, fosters greater accountability, and reduces the likelihood of future conflict.</p>  |
| Project Implementation and Monitoring Phase   |   |
| <p>11. Project construction kick-off meeting, with leaders of all participating parties coordinating responsibilities and scheduling.</p>   | <p>11. When leaders model collaboration and support peace, others usually listen and follow suit.</p>   |
| <p>12. Strategic use of external funding as leverage, to:</p> <ul style="list-style-type: none"> <li>• Serve as a "carrot" to overcome tension between local partners and as incentive to achieve viable, locally-determined water use agreements required at the onset of project.</li> <li>• Ensure that local government-promised project contributions are realized transparently.</li> <li>• Ensure that commitments made by benefiting families are met.</li> </ul>                     | <p>12. Neutral third parties can facilitate dialogue and collaborative efforts which encourage conflict-prone groups to supplant mistrust with shared accomplishment.</p>                       |
| <p>13. Identification and swearing in of the new drinking water committee members in a community-led assembly.</p>  | <p>13. Strengthening and contributing to a vibrant civil society promotes peace and helps achieve right relationships.</p>  |
| <p>14. Workshops and on-the-job training for drinking water committee members, including:</p> <ul style="list-style-type: none"> <li>• Operation and management skills through assisting project-paid masons and plumbers.</li> <li>• Administration skills through directing manual labor contributions to the project (e.g., organizing trenchline excavation by the families).</li> <li>• Accounting skills through recording any family cash contributions toward the project.</li> </ul> | <p>14. Capacity-strengthening of local leadership promotes sustainability and increases the ability of the community to resolve future water disputes that arise in a changing environment.</p> |

| Task  | Peacebuilding “Change Process” and/or Ethical Obligation  |
|---|---|
| Project Implementation and Monitoring Phase   |   |
| 15. Community-wide workshops on health/hygiene, water system cleaning/maintenance, introduction of drinking water committee to statutes and importance of collecting monthly tariffs for ongoing operation, maintenance, replacement, and source protection costs.    | 15. Appropriate training that builds upon the community’s existing wisdom can prepare historically marginalized populations, including youth and women, to prevent or transform conflicts now and into the future.        |
| 16. Project implementation, scheduling, and community organizing, building upon local traditional practices, beliefs, and organizational structures.  | 16. Indigenous, non-violent approaches to conflict and reconciliation are pathways to right relationships.  |
| 17. Timely reviews of monthly project updates, prepared by the implementing NGO, along with periodic site visits by funding NGO representatives.  | 17. Periodic mapping of potential future conflicts facilitates timely preventive measures.  |
| Project Evaluation and Close-Out Phase  |   |
| 18. Final project walk-through with participation of all partners, including a bacteriological analysis of water from several of the distribution points. Once all issues are addressed, official document signed by all acknowledging successful project completion. | 18. The precautionary principle of avoiding the possibility of harm should be incorporated into all stages of peacebuilding-driven water development.   |
| 19. Representatives of the implementing and funding organizations are present during the inauguration of the community-organized and community-led water supply project.  | 19. Celebration of communal milestones achieved offers opportunities for reflecting on conflicts overcome and setting new goals.  |
| 20. A process is established for ongoing accompaniment and training of the drinking water committee in order to facilitate effective water system administration, operation, and maintenance into the future.   | 20. The level of trust and resulting peaceful coexistence increase between and within communities through collaborative initiatives that increase the amount of constructive, safe interaction taking place between them. |

For a more comprehensive list of steps to consider taking in the development and implementation of water supply and sanitation projects, refer to the CRS document, *Guidelines for the Development of Small-Scale Rural Water Supply and Sanitation Projects in East Africa* (Warner and Abate 2005).

At this point, the reader may be thinking, “I agree with the concept of promoting peacebuilding. The background on causes, manifestations, and projections of water conflict is helpful. The statements by leading world bodies increasingly promoting the human right to water are heartening. But how do we bring these lofty conflict transformation ideas into the realm of tangible, concrete water and sanitation projects and programs on the ground?”

This chapter is aimed at responding to such concerns. Three sections are included here to assist practitioners in this endeavor:

1. *How to organize a comprehensive water development agenda, with a focus on peacebuilding, supplemented by concrete examples of actions called for by leading water advocates of our day.*
2. *What specific tools and methodologies to use for resolving disputes and transforming conflicts associated with water. Many of these same techniques can promote conflict prevention.*
3. *What recommended conflict transformation steps to use in addressing a variety of typical water-related conflict scenarios. Offers a “what to do” list that development practitioners can tap into in order to establish their own response, specific to each individual situation and generated with full participation by local leadership.*

“Once an aid provider has internalized the idea of dividers/tensions and capacities/connectors, she or he will always view choices through these lenses. It will become second nature to think about the inadvertent side effects of programming decisions in the context of conflict. . . . Additionally, it will become natural to consider how to achieve the agency’s mandates and programming purposes in ways that do not exacerbate intergroup tensions but that support and strengthen connections among people as they build a just and peaceful society.”

*Anderson 1999, p. 74*

## Peacebuilding Perspectives to Guide a Water Development Agenda

“A global ‘Blue’ covenant on water is needed, and should include:

**Water conservation:**

*‘The right of the Earth and of other species to water.’*

**Water justice:**

*‘Solidarity between global North and South, promoting water for all and local control of water.’*

**Water democracy:**

*‘Recognition of water as a fundamental human right for all.’”*

*Barlow 2007*

A top priority in guiding water and sanitation programming in areas of possible and actual conflict is to “advance the peacebuilding potential created through the trust developed by community partnerships and cooperative ventures.” (Lubarr 2005, p. 6). Peacebuilding can be enhanced by focusing on:

- Root Cause/Justice
- Building Relationships
- Institutional Development
- Appropriate Technology / Development Approach

Examples of successful water-related peacebuilding efforts that fall within the scope of each of these components are provided in Boxes IV.1 through IV.4.

### “Root Cause/Justice”

*Peace can be achieved by addressing the underlying issues of injustice, oppression/ exploitation, threats to identity and security, and people’s sense of injury/victimization.* (Woodrow 2002)

- Implement the concepts of “the human right to water” and “water as a vehicle to end poverty” by enabling access to, and provision of, potable water and sanitation facilities (Wright and Warner 2008).
- Treat water development projects not as ends in themselves but rather as means toward reducing poverty, meeting basic human needs, and increasing human security (Conca 2006, p. 2).
- Put social equity and the interests of the poor at the center of integrated water resources management (UNDP 2006b, p. 28).
- Support grassroots organizations and civil society networks in their advocacy efforts to promote the recognition and practical implementation of the human right to water, both at the local levels and globally.
- Educate students and the broader public about the right to water and sanitation (Centre on Housing Rights and Evictions et al. 2007, p. 48).

- Educate the general public about the opportunities squandered by excessive military spending, in order to put pressure on policy makers to adjust budget-spending priorities in the direction of peacebuilding, including water and sanitation infrastructure development.
- Assist religious leaders, such as the national bishop's conferences and interfaith bodies conferences of religious and diocesan justice and peace commissions, in the formation of reflection / guidance documents pertaining to equitable water governance policies.
- Enhance understanding of the global demands that drive local resource pressures and resulting water-related conflicts—from commercial shrimp and salmon farming to massive hydroelectric projects—by supporting such measures as product certification, consumer information campaigns, and “cradle to grave” accountability. (Conca 2006, p. 3)
- Advocate for an end to practices by multilateral lending institutions that involve the imposition on developing countries of water privatization or “full cost recovery” as a condition for new loans and renewal of loans. Likewise, advocating for the exclusion of water privatization and liberalization clauses from any multilateral, regional, or bilateral trade agreements. (Indigenous Peoples Kyoto Water Declaration 2003, Arts. 25, p. 26).

“Respect for human life and for the dignity of the human person extends to the rest of creation.”

*John Paul II 1990, Art. 16*

## Box IV.1 “Root Cause/Justice”

### Examples from the Field

- In Cajamarca, Peru, where U.S.-based Newmont’s Yanacocha mine is polluting downstream water resources and causing conflicts and fatalities, Oxfam America provides periodic news updates that serve as a vital link between Peruvian advocates on the ground and global justice and peace actors. This is part of its stated goal “to ensure the oil, gas and mining industries respect the rights of community members impacted by extractive industries projects, and that projects contribute to the long-term reduction of poverty” (Oxfam America 2007).
- Following the destruction of two wells by the Israeli military in the Gaza Strip which provided the Palestinian town of Rafah with nearly half of its drinking water supply, Save the Children-Jerusalem worked with local municipal authorities to develop a case study included in the 2003 “Thirsting for Justice” report by the Center for Economic and Social Rights (CESR). The report was presented for consideration to the 30th Session of the United Nations Committee on Economic, Social and Cultural Rights.
- In El Salvador, CRS partner Caritas El Salvador is taking a leading role in the “Foro de Agua,” a permanent Water Forum comprised of more than 100 organizations and institutions. The Forum’s stated aim is to influence public policy in order to achieve responsible, equitable, efficient, and participative governance of water resources. The forum has taken a public stand against privatization of water services and unsustainable practices—from uncontrolled urban sprawl to large dam construction and metal mining—and in 2007 presented a proposed General Water Law bill to the Salvadoran legislature.
- In Tamil Nadu State in India, where the poorest of the poor are the Dalits (the “untouchables” caste) and tribal people, children are segregated by caste at school, Dalit women cannot draw water from the same well as others, and men must use separate drinking containers based on caste. Trócaire, the overseas development agency of the Irish Catholic Church, supports a Dalit self-help group, the People’s Education and Economic Development Society. They educate, use the law to challenge such discrimination, and run credit unions and income-generation programs (CRS 1998, 16).

## “Building Relationships”

*Peace emerges through breaking down isolation, polarization, division, prejudice and stereotypes between/among groups. Strong relationships are built first on commonalities that later enable people to respectfully explore differences (Woodrow 2002).*

- Increase the level of trust between and within communities via multi-party collaborative water development projects, by facilitating opportunities for constructive, safe contact among them. Past sources of conflict, or “dividers,” are supplanted by newly achieved “connectors,” linking people for peace across conflict lines (Caritas Internationalis 2002).
- Provide appropriate incentives for parties historically in conflict to come together and resolve their differences as a precondition for the opportunity to participate in a mutually-beneficial water development project.
- Take the initiative to mediate informally or formally between differing parties (Ndelu 1998, p. 73).
- Initiate ventures requiring leaders of opposing factions to work together (Ndelu 1998, p. 73).
- Help various stakeholders (e.g., communities, civil society organizations, and local governments along a given binational watershed) to join forces, communicate problems, and identify common solutions (Centro Agronómico Tropical de Investigación y Enseñanza 2007).
- Provide a collective ecumenical or inter-religious voice in local and global public debate on water and sanitation issues, recognizing that when religious leaders model collaboration and support peace, others often listen and support peace too (CRS 2008, p. 124).

“Obviously nature knows no boundaries; the interdependence of natural resources requires a region-wide, cross-border management in order to solve urgent matters such as water scarcity and the pollution of water resources. Here lies the potential of environmental peacebuilding to contribute to the process of building peace in a region of protracted conflict.”

*Harari 2008, p. 23*

## Box IV.2 “Building Relationships”

The Good Water Neighbors Project of the Middle East

*Excerpts from N. Harari and J. Roseman, Environmental Peacebuilding Theory and Practice (2008).*

*The “Good Water Neighbors” (GWN) project was established by EcoPeace / Friends of the Earth Middle East in 2001 to raise awareness of the shared water problems of Palestinians, Jordanians, and Israelis. The GWN methodology is based on identifying cross border communities and utilizes their mutual dependence on shared water resources as a basis for developing dialogue and cooperation on sustainable water management. There are clear indicators that confirm that GWN has created real improvement within the water sector by building trust and understanding that has led to common problem solving and peace building among communities in the midst of conflict.*

*Seventeen Israeli, Palestinian, and Jordanian communities participate in the project. Each community is partnered with a neighboring community on the other side of the border/political divide to work on common water issues. On the local level, GWN works with community members to improve their water situation through education and awareness activities, and urban development projects. On the regional level, GWN works to encourage sustainable water management through information sharing, dialogue, and cooperative ventures. Program participants include youth, adults, environmental professionals, and municipal leaders.*

Concrete results of this initiative in a context of seemingly intractable violence include:

- Exchange of information and gathering of individuals from neighboring communities.
- Formation of youth volunteer water trustees.
- Transformation of a public building, such as a school, in each community into a water-wise facility.
- Launching of public petitions concerning a common cross-border water problem needing to be solved by each pair of neighboring communities.
- Creation of ecological gardens in each community.
- Organization of workshops on water-wise issues.
- Generation of a series of “Memorandums of Understanding” by mayors of the paired communities.

## “Institutional Development”

Peace is secured by establishing stable/reliable social institutions that further promote democracy, equity, justice, and fair allocation of resources. Establishing better mechanisms for social oversight of water governance leads to greater accountability and transparency, reduced conflict and more effective water resources management. (Woodrow 2002)

- Develop integrated water resources management strategies that set national water use levels within the limits of ecological sustainability and provide a coherent planning framework for all water resources (UNDP 2006b, p. 28).
- Support the work of governments and communities by providing information, facilitating community organization, and assisting communities with their advocacy and social oversight efforts (Centre on Housing Rights and Evictions et al. 2007, p. 47).
- Support the development and growth of local and national civil society organizations and community-based organizations (Centre on Housing Rights and Evictions et al. 2007, p. 49).
- Build community and government capacity and knowledge of water and sanitation issues, including rights and responsibilities, management, and technical information (Centre on Housing Rights and Evictions et al. 2007, p. 48).
- Monitor actions on water and sanitation by government and third parties (Centre on Housing Rights and Evictions et al. 2007, p. 48).
- Deliver on promises and thus inspire further development—“Success breeds success” (Ndelu 1998, p. 73).
- Establish between states the development of shared data, information systems, water management institutions, and legal frameworks, which help sustain efforts to reduce the risk of conflict (OECD DAC 2005, p. 1).

For an example of an organizational structure arising out of years of successful institutional development experience, see Box IV.3.

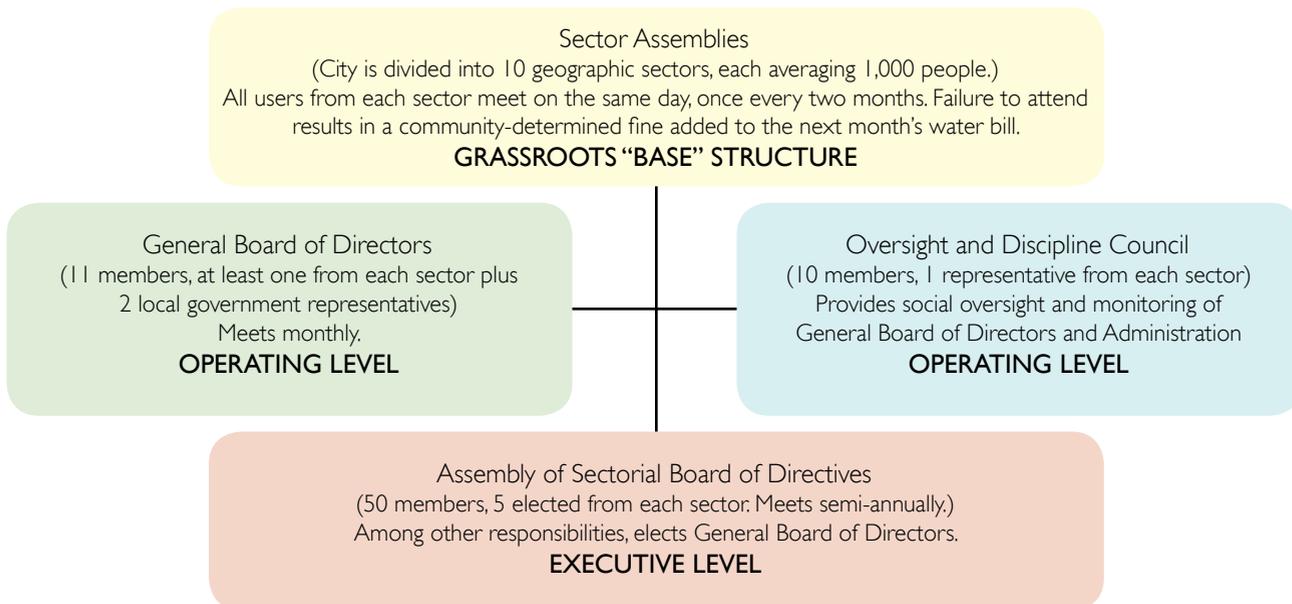
“Support to local organizations that promote participation and pluralism is part of the process to ensure lasting peace. . . . By effectively strengthening local NGOs in civil society, constituencies can be created that hold governments accountable to adopting policies that minimize conflict.”

*Hackett 2000, p. 278*

### Box IV.3 “Institutional Development”

#### Good Community Water Governance Equals Good Conflict Prevention

Organizational structures that institutionalize participatory democracy and civil society leadership create an environment in which the likelihood of water-related conflict is reduced and the conflicts that do occur are effectively “transformed.” Take the JAPOE Water Services Administrator for the 10,000 person community of Jesus de Otoro, Honduras (Fiallos 2008). The administrative structure is built upon institutionalized participatory decision-making, as follows:



All above community leadership positions are unpaid, democratically-elected, and of three-year duration, with established term limits. A small, paid administrative/technical staff works full-time, reporting to the General Board of Directors. Approximately 30 landowners—more than 80% in the area of the recharge zone for JAPOE’s water source—have signed “environmental services” provider contracts. Upon annual verification by university volunteer interns that soil conservation, reforestation, and water protection measures are being implemented as agreed upon, each participating landowner receives an “incentive” payment of approximately \$100 each per year, funded by the users through their monthly water bills.

## “Appropriate Technology / Development Approach”

Sustainable technologies and development approaches appropriate for the context in which they are to be applied can improve livelihoods and lead to reduced conflict.

- Defuse tensions as water stress worsens by increasing productivity of water-use-output per unit of water through drip irrigation and other agricultural measures that increase the “crop-per-drop” ratio (Postel and Wolf 2001, pp. 7–8).
- Utilize “soft path” approaches to match quality of water with its use, e.g., grey water systems for irrigation, and to match the scale of infrastructure to the scale of the need, e.g., decentralized rainwater capture and storage for domestic use or small-scale irrigation, as opposed to large, often conflict-ridden centralized facilities (Gleick and Wolff 2002, p. 1).
- Recalibrate the response to global warming. Place greater emphasis on strategies for adaptation in national water management policies and aid efforts, in order to assist marginalized populations facing the negative consequences of climate change (UNDP 2006b, p. 28).
- Recognize traditional, indigenous systems for managing water, developed and validated over the course of hundreds of years. For that reason, they should be better understood, valued, recovered, and disseminated as proven alternatives for sustainable approaches to water governance (CONDESAN 2003, pp. 5–6).
- Widely communicate research on ways to implement the right to water and sanitation, including lessons learned on-the-ground by development practitioners. The goal is to share outcomes with all stakeholders as well as peer organizations (Centre on Housing Rights and Evictions et al. 2007, p. 48).

An example of the application of the Appropriate Technology / Development Approach is shown in Box IV.4.



Photo by David Snyder/CRS. (2007)

*A Lesotho villager waters a keyhole garden, a small but nutrient-rich and highly productive plot that lets her grow more food to feed her family.*

### Box IV.4: “Appropriate Technology / Development Approach”

#### Local Autonomy Supplants Local, Corruption-Driven Conflict

The community development approach employed by Bolivian NGO Suma Jayma minimizes the potential for conflict through an ongoing, yet at times intermittent, working relationship with small communities and their corresponding local governing officials in five municipal jurisdictions in the Andean high plains. Dedicated to implementing technologically appropriate water projects (e.g., gravity water supply systems and locally made hand pumps), Suma Jayma’s defining strength is its ability to be autonomous in deciding whether or not to continue implementing future community projects within a given municipal jurisdiction, based on the performance of the local government officials.

By earning the trust of its foreign funding partners, Suma Jayma is able to determine whether to continue working in a given municipal jurisdiction or to put on temporary hold the start-up of any new water projects. An indefinite postponement may be required until the municipality resumes best practices of transparency and accountability. If local government officials are “unable,” i.e., unwilling, to continue best practices, Suma Jayma gives them “time to mature.” In the meantime, members of the surrounding villages, denied implementation of Suma Jayma-led water projects, are usually quite willing to help these elected officials in their “maturing” process. More effective, transparent, local government, as well as increased citizen participation in local democratic processes, is the result. Conflict caused by corrupt development practices is minimized.

An Aymara himself, like the villagers whom he helps, Braulio Rojas, in his role as director of Suma Jayma, sees the NGO’s efforts as serving two principal aims: to meet the critical need of rural indigenous families for access to improved water in their homes, and to foster good governance at the level of the local drinking water committee and the municipal government. Having faced his fair share of wayward officials, he beams when explaining the benefits of this conflict-minimizing approach to water development:

- *We can opt for the local governments that are most ready to work, most likely to complete their agreed upon commitments in a timely fashion, and most willing to do both without entering into corrupt practices.*
- *With several local government partners, we don’t have to stop everything if the operation of one becomes paralyzed due to political in-fighting or freezing of municipal accounts due to irregularities. We can give more time and energy to those that are most fired up about working, rewarding effective and efficient local public administration.*
- *By working with various municipalities, we can hold up successful actions taken by a given local government as positive examples of what can be achieved by the others. ‘Look at what the Municipality of Calamarca is doing in allocating funds from different sources within its budget. . . . The local government of Comanche not only provides use of their heavy equipment for transporting construction materials, but the fuel as well!’*

## Water-Related Conflict Transformation Tools and Techniques

In this section, Mark M. Rogers provides a menu of dispute-resolution and peacebuilding tools and techniques that can help transform water-related conflict. It is important that water development practitioners be equipped with them because unforeseen circumstances can result in water-related conflict despite the best-laid plans and investment in conflict prevention.

Unlike many other types of conflict, water-related conflict offers few opportunities for creating a bigger pie—in this case, adding new water to the equation. Zero-sum scenarios are common, and “both . . . and” strategies may not be viable. Without the option of creating more water, solutions tend to focus more on water use, such as more equitable sharing of existing resources, improved efficiency of supply and demand, conservation, and/or short-term transfers from other areas. Despite this constraint, the full menu of conflict transformation, dispute-resolution, and peacebuilding tools and techniques can help address water-related conflict.

Multi-stakeholder planning, policy dialogue, and conflict transformation are all multi-faceted processes that draw on similar tools and techniques. Few of these techniques used in isolation yield the desired changes. Instead, a series of initiatives tailored to the needs of the people and the realities of the context is often needed. Several of the techniques covered here are also conflict-prevention techniques, and may have value at any stage of a conflict. Generally speaking there are three broad, though rarely separate, phases in any given multi-stakeholder planning, peacebuilding, or dispute resolution initiative:

1. *Preparation and groundwork*
2. *Planning and negotiation*
3. *Implementation and monitoring*

Advocacy has a role to play in many cases, and may be brought to bear in different phases or moments.

“Water management by definition is conflict management.”

*Dourojeanni 2007, p. 2*

The phases, in greater detail, are:

1. Preparation and Groundwork<sup>2</sup>
  - a. Analyzing Conflict
  - b. Identifying and Engaging all Stakeholders
  - c. Improving Communication and Building Trust
  - d. Addressing Historical Needs for Reconciliation
  - e. Designing a Process
  
2. Planning and Negotiation
  - a. Defining an Agenda—Issues to Work On
  - b. Identifying Interests
  - c. Collecting Information
  - d. Developing and Exploring Options
  - e. Engaging and Informing Constituencies
  - f. Negotiating Agreement
  
3. Implementation and Monitoring
  - a. Advocacy to Win External Support
  - b. Working Out the Details
  - c. Monitoring Agreements
  - d. Renegotiating as Needed

Box IV.5 presents an example of how this holistic approach to rebuilding social cohesion among conflict-divided groups can lead as well to a restoration of a community's shared water resources.

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<sup>2</sup> Adapted from Fisher and Saul (2001).

### Box IV.5 CRS Peacebuilding School: Restoring Social Cohesion to Protect Water

Since 2003, CRS El Salvador has facilitated an annual Peacebuilding School, designed to strengthen the ability of experienced community organizers to serve as a catalyst in promoting and articulating social transformation initiatives within their own communities. With approximately thirty participants each year, the three-day participatory workshops, given over a period of nine months, address a variety of peacebuilding topics, ranging from non-violence to human rights, and from dispute mediation to political advocacy.

Perhaps the greatest testament to the effectiveness of this program is the achievements of the students themselves. Take, for example, Demetria Portillo:

Concerned about the heavily contaminated Jalapa River passing through her community and that of others, she initially organized a trash clean-up campaign along the river. Just two weeks later, however, frequent dumping had it already looking the same as before. Realizing a more comprehensive, lasting approach would be required, she then led efforts to overcome institutional, political and geographic divisions to build the social cohesion necessary to sustain an effective control over the quality of their water resources. As part of the peacebuilding school program, she developed a plan to accompany, train, and energize existing civil society and government bodies to put aside ideologically and personality-driven divisions in this polarized, post-civil-war society in order to take a united stand in defense of water. With minimal outside funding, their efforts included:

- Facilitating gatherings of a newly created inter-institutional network of key stakeholders, including local community leaders, health professionals, and government officials dedicated to the cleaning up of the Jalapa River watershed. This network continued to exert pressure upon commercial, industrial, and municipal entities to stop their contaminating practices.
- Coordinating with fourteen schools to encourage student-led advocacy and direct service efforts aimed at promoting the health of the river ecosystem.
- Utilizing mass media to promote environmental awareness-raising among the general population.

Over a several year period, Demetria helped her community achieve an enormous change in attitude, not only in regard to issues of watershed protection, but also in terms of what can be achieved when people work together for a common cause. A couple of concrete examples of change included:

- The hospital no longer dumps its medical waste into the river.
- The municipalities have established solid waste collection points.

The process is not as linear as the above outline suggests and often multiple activities and even phases may run at the same time. There is an art to scheduling, sequencing, integrating, repeating, scaling up, and creating synergies between these tasks and the different tools and techniques. Invariably, however, there is a common starting point—the conflict assessment. Details of the phases are described in the following sections.

“Where climate change and violent conflict create a potential vicious circle of destructive effects, adaptation and peacebuilding combine to construct a virtuous circle of increasing stability.”

*Smith and Vivekananda 2007, p. 46*



Martin Lueders

*Children in Afghanistan face a harsh environment as well as years of violent conflicts.*

## Preparation and Groundwork

### Analyzing Conflict

Out of the wealth of literature on conflict assessment, two factors in particular merit repetition and reinforcement here.<sup>3</sup> First, assessments of water-related conflict need to take into account the full range of potential root and proximate causes. As with many types of conflict, water-related conflicts rarely exist in isolation from other conflicts. Water can be used for political purposes, as an expression of power. It can be manipulated out of greed. A thorough conflict analysis should reveal the connections between water-related conflicts and other, concurrent conflicts.

Second, even though the presenting issue may appear to be limited to a single dimension, such as social equity, other concerns, such as ecological and economic efficiency, should also be investigated as part of the assessment. Few conflicts are as neatly categorized as they may appear in this text. Expect there to be elements of all three concerns: social equity, ecological/environmental concerns, and economic efficiency. The conflict assessment should weigh the importance of each factor involved. Where environmental-impact studies, hydrological surveys, evaluations, and data are available, they too should be considered in the conflict assessment.

Appendix A, “Summary of Lines of Inquiry for Evaluating the Risk of Water-Related Conflict,” contains a list of additional questions to consider when assessing water-related conflicts.

### Identifying and Engaging All Stakeholders

Given the almost universal need for water, a complete and thorough water stakeholder analysis is essential. Often, water conflicts are framed in terms of the primary parties, such as urban/rural, industry/agriculture, small farmer/agro industry. Rarely are only two groups affected by water conflict or the solutions to these conflicts. Solutions may spark new conflicts among other stakeholders. In water-related conflicts, analysts should consider all water stakeholders, not just the presenting stakeholders in the conflict at hand.

Box IV.6 contrasts two water programming initiatives. One, based on a comprehensive conflict assessment, led to decreased suspicion and increased collaboration. The other, devoid of such groundwork, led to increased tension in an already highly charged setting.

<sup>3</sup> A thorough inventory and description of published sources on conflict assessment frameworks and methods is available in Africa Peace Forum et al. (2004) and Paffenholz and Reyhler (2007).

## Box IV.6 Water Projects in Postwar Angola

Excerpts from T. Paffenholz and L. Reychler, (2007).

*When evaluating the peacebuilding effectiveness of two water rehabilitation programs in post-war Angola, we found two totally different results: one agency had planned its program using only development criteria and set up water points at those areas indicated by the water feasibility study. This led to serious tensions between the two villages located in the area. One village was full of returning refugees belonging to the former conflict party UNITA, while most of the inhabitants of the other village belonged to the other former conflict party, the ruling MPLA party. As the new water point was much closer to the “MPLA” village, the “UNITA” villagers saw this as proof that the MPLA government was monopolizing aid resources for their supporters and that aid agencies were working hand-in-hand with them.*

*In the second water program the aid agency had conducted a water feasibility study and additionally a participatory conflict/peace analysis: They had invited the conflicting stakeholders to jointly decide where the water points should be established (taking into account both the development feasibility study and the conflict/peace analysis), and also established joint water management committees. Thus, the program did “no harm” to the conflict situation and also contributed to local peacebuilding through the joint committees.*

Although water can be a great unifying force, polarization, fear, ignorance, and prejudice conspire to keep people apart. In certain circumstances, primary stakeholders will not take advantage of opportunities for dialogue and negotiation until they are brought together by conveners or public figures respected by all sides, such as religious leaders, former ministers, judges, or ambassadors, or even celebrities. The convener can directly facilitate the process; bring the parties together for a process to be facilitated by professionals; or be part of a mixed team.

Convening is a preliminary step in a larger process. Although the larger process does not need to be mapped out in its entirety ahead of time, organizers do need to anticipate possible next steps. Once people come together, conveners need to be able to articulate the options available for dialogue and negotiation.

### Improving Communication and Building Trust

#### *Improving dialogue*

Dialogue has come to mean many things to many people. In the traditional sense, “dialogue” refers to a discussion with the exclusive purpose of enhancing mutual understanding. There is no preconceived subsequent step. But dialogue is often a

“When the common good is defined by the people who are confronted with the problems and then supported by international organizations, actions that follow will more likely address the structural and cultural tensions in society.”

*Hackett 2000, p. 280*



Photo by David Snyder/CRS, 2005.

*In the wake of Angola's civil war, traditional leaders participate in a conflict resolution course taught as part of the CRS PARTICIPAR project.*

precursor to planning, negotiation, and other collaborative processes. Reference to a dialogue “platform” calls up a need for ongoing engagement, although in a way that keeps expectations to a minimum, so that there is greater room for flexibility. Box IV.7 presents lessons learned from an effort at promoting dialogue over the contentious issue of water:

### Box IV.7 Results from Dialogue in a Tanzanian Water-Stressed Basin

*Excerpts from J. Sarmett et al., “Managing Water Conflicts through Dialogue in Pangani Basin, Tanzania” (2005).*

*Pangani [Tanzania] is a water-stressed basin with many latent and emerging conflicts [over scale, tenure, and location] . . . among water user groups. To address these conflicts, dialogue platforms were established at each site to bring together actors to discuss the contentious issues and work towards consensus in resolving them. . . . One case involved recognizing the efficacy and to some extent reinstating traditional systems where water was managed by hydrological boundaries and not administrative boundaries. In one case, [in] a conflict between the Arusha Urban Water Supply and small-scale downstream users, the dialogue process stalled because of political and national interests.*

*We found that dialogue processes require time [and] resources and increase the transaction costs of water management. At the same time, dialogue can strengthen Water Users Associations (WUAs), foster relationships between the government and communities, and promote the formation of new WUAs. Dialogue processes have a better chance of success if they are initiated prior to a crisis situation. The process should include: an analysis of the conflict, relationship and trust building, negotiating solutions and action plans, and joint implementation of the action plans. The more inclusive the process is, the more sustainable and equitable the outcome will likely be.*

The precise meaning of “dialogue” has become diluted through overuse. As just mentioned, in the traditional sense “dialogue” refers to a discussion with the exclusive purpose of enhancing mutual understanding. Guidance developed by CDA for OECD (2007) proposes the following guidelines:

*While there is no consensus on a precise definition of dialogue, there is broad agreement on elements that comprise dialogue in the context of conflict prevention and peacebuilding:*

- *It is a deliberate process.*
- *It encourages (and provides opportunities for) disagreeing protagonists to talk with each other, in face-to-face interaction or indirectly. The protagonists include parties to a conflict or potential conflict, or factions within a party.*
- *It is an organized form of communication when constructive discourse is difficult or blocked.*
- *Its purpose is to have a positive influence on the conflict.*

*The key aspects of dialogue include:*

- *A range of goals, from simply improving communication and relationships to recommending political solutions in negotiations.*
- *A range of specific issues addressed.*
- *Varying degrees to which the process is carefully designed or evolves, based on the needs and interests of the group.*
- *A range of participants, from grassroots community members to mid-level influentials to high-level political operatives with connections to decision-makers.*
- *A range of third party functions and roles.*

Dialogue platforms invite engagement and effective communication. Many dialogue platforms today are used to engage in planning and/or negotiation (Herzig and Chasin 2006).

#### *Awareness-Raising*

Water-related conflict involves a complex range of issues and can best be understood when viewed through the lens offered by several different professional fields. Being a stakeholder does not necessarily mean that one is fully versed in all the complexities associated with water-related conflict. Some awareness-raising initiatives are most likely appropriate for any and all of the issues raised in the first sections of this text. These can range from national information campaigns; to building community and government knowledge on water rights, responsibilities, and management; to collecting and disseminating detailed scientific information on a specific subject. One example of consciousness-raising involves efforts to educate all stakeholders (politicians, development workers, direct participants), as well as the general public, on the paradigm shift from merely sharing water resources to sharing the benefits of water resources management and use, accounting for both human and ecological needs (Wright and Warner 2008).

#### *Confidence-Building Initiatives*

Confidence-building initiatives can facilitate relationships among various stakeholders, such as communities within a given watershed, and lead to improved communication and collaboration. Sharing a meal is one of the most common and powerful confidence-building techniques. Participants are asked to refrain from talking about the issues and the conflict, and instead must engage each other as human beings. Exchanges can also build confidence and may involve visiting delegations or an exchange of video or audio communiqués. Unilateral or reciprocal good-faith gestures that are independent of preconditions can also help build confidence.

#### *Addressing Historic Needs for Reconciliation*

### **Box IV.8 Somalia and Ethiopia: Unresolved Historical Conflicts Impede Water Cooperation**

*Excerpt from A. Mohamed, "Need for Transboundary River Cooperation" (2002).*

Somalia in a vulnerable end user located in a downstream area, which is the least favorable position to be in hydro-political terms. . . . [Somalia is] permanently very dependent upon the actions taken by Ethiopia. Although the issue of the Juba and Shabelle Rivers is a hidden and powerful one that could explode at any time in the future, no negotiations could be initiated before addressing and solving other more fundamental causes of the historical conflicts and the current tensions. In view of [the] region's current political conditions as well as the historical facts, [the region] is unlikely to realize the desperately needed cooperation, and future water conflict seems to be inevitable.

In situations like that described in Box IV.8 above, little progress can be made in the present until closure on past events is achieved to everyone's satisfaction. Unresolved issues may have nothing to do with water, and may even concern stakeholders who died decades ago, so that people no longer remember the roots of the problem.

Reconciliation is the nexus of “truth, justice, peace, and mercy” (J.P. Lederach, 1997). Reconciliation programming options are usually culture-specific. There are a number of common approaches to reconciliation, and programs may need or choose to employ multiple approaches.

- *Producing mutually acceptable historical records:* History is recorded and reflects the bias of its authors. A mutually prepared history of the conflict can introduce new language and new perceptions that bring closure on specific issues. This might entail collaborative research by historians representing all stakeholders.
- *Solidarity events:* Ceremonial gatherings that bring together all stakeholders to celebrate common interests can serve to demarcate the closing of one era—of conflict—and the opening of a new era, one of collaboration. These events frequently take months of preparation, including, at times, single-identity preparatory work (Church, Visser, and Johnson, 2002)..
- *Cleansing and readmittance rituals:* Where individual perpetrators have been identified and, in some cases, formally judged, reentry rituals serve to reconcile the offender with his or her community.
- *Public apology:* A public apology may serve to bring closure to the past and shift the focus onto what needs to happen next. This approach can be retroactive, as in the case of current administrations apologizing for the errors of earlier administrations.
- *Reparations:* The more tangible the subject, the more feasible reparations become. Reparations can be readily made for tangible items whose value is easy to assess. But how does one make reparations for lost dignity? Symbolic reparations may be acceptable. Reparations may need to be accompanied by public apologies, revised historical records, or solidarity events.
- *Affirmative action:* This refers to the additional preparation or investment needed to ensure that both privileged and disadvantaged individuals—people coming from very different starting points—achieve the same or similar outcomes. For example, even though two groups may receive an equal ration of water; if one group has the capacity to store unused water and draw upon it during peak demands and the other does not, then access to water is not equitable. The group with storage capacity has greater access, even though they receive the same volume of water. In this case, affirmative action might include building similar storage capacity for the disadvantaged group.

### *Designing a Process*

Although this text describes a general overarching process, there are many decisions that go into developing a specific process that will respond to the needs of the participants and the challenges they are facing. The process and the participation of stakeholders are closely linked.

Political power often trumps popular concerns, but rarely erases them. When political power suppresses popular interests, conflict can simmer interminably. Levels of popular participation under these circumstances are often characterized as manipulation, decoration, tokenism, or assignment (Hart 1992).

A more genuine process of give-and-take is likely to result in more durable solutions. Levels of participation under these circumstances are characterized by consultation, empowered unilateral decision-making, and collaborative decision-making.

A number of well-known tools to build popular and political buy-in are listed in the section on Engaging and Informing Constituents in the Planning and Negotiation phase. Process options include, but are not limited to: awareness-raising; confidence-building; conflict analysis; dialogue; research; envisioning a common future; planning; negotiation; using third-party, neutral facilitators; and advocacy among others. Conflict transformation is not linear and frequently involves multiple processes or a series of processes. Participants move back and forth in a unique sequence they tailor to their own needs. A few options not addressed elsewhere are mentioned here.

### **Building on Known and Proven Processes**

Traditional methods of resolving disputes are usually well known and accepted by communities:

*On the local level, traditional community-based mechanisms are already well suited to specific local conditions and are thus more easily adopted by the community. Examples include the Chaffa committee, a traditional water management institution of the Boran people in the Horn of Africa; or the Arvari Parliament, an informal decision making and conflict-resolution body based on traditional customs of the small Arvari River in Rajasthan, India. (Wolf et al. 2005).*

Water is rarely a new issue, and long-standing and traditional practices are often good places to begin looking at alternatives. Appreciative inquiry into what has worked in the past frequently generates viable options for consideration. Care needs to be exercised to ensure that people who were marginalized in past processes and solutions are not again marginalized by the present application of options that worked previously.

#### *Envisioning a Shared Future*

Envisioning exercises are helpful in expanding the number of options and in setting the broad direction for the future. These can be bottom-up processes that start at the grass roots, or cascading processes that originate higher in the state hierarchy. Because the intent is to expand the number of options and generate creative possibilities, envisioning can be very useful in working with large numbers of participants in many small groups spread out over different locations. Freed from the constraints of the past and the present, envisioning can reveal aspirations shared by people in the conflict (Dugan 2003).

#### *Using Research to Generate Options*

A peacebuilder's job is to expand the number of options. An important step in this is to separate the process of identifying the options from the process of assessing the viability of those options. Because parties frequently enter negotiations and collaborative processes having already decided upon their desired outcome, they will have to suspend evaluation until all options have been identified. This can be extremely difficult for technicians involved in the negotiations who have been trained to focus on the "best" option and/or instructed to "tell us what to do here."

If a researcher is not a primary stakeholder, he or she probably should have no role in the decision-making. Instead, researchers can offer important contributions by laying out various possibilities, with clear descriptions of the advantages and liabilities of each option. Researchers can draw attention to ideas and options that are new to the primary stakeholders. They can provide information on the efficiency of traditional methods. Researchers can also share information, experiences, and results from other locations where different options were employed.

*Bridging the Gaps in Technical and Social Ingenuity*

Technical solutions may have unacceptable social consequences and, hence, generate additional conflict. These are sometimes framed as “contemporary” versus “traditional” technologies. In some cases, it may not be possible to separate the technical and social components. Identifying the social interests behind specific technical alternatives can help identify important criteria for evaluating technical options. For example, proximity to a site of religious importance may require selecting an alternative site that is less desirable from a technical standpoint. Box IV.9 is an example of this call for greater mutual respect between the promoters of technical advantage and the partisans of social ingenuity.

**Box IV.9 Southern Africa’s International Shared Water Facility: A Call to Balance the Technical with the Social**

*Excerpts from A. Turton, “A Southern African Perspective on Transboundary Water Resource Management” (2003).*

*Data imbalances increase power disparities within river basins in southern Africa, acting as fundamental drivers of conflict. . . . The International Shared Water Facility (ISWF) runs the risk of being dominated by Northern, developed-country technocrats with a bias towards technical solutions, which would de-emphasize indigenous forms of knowledge that are alive and well in some social settings in the developing South. One example of such indigenous knowledge is the natural capacity that water has as an element of cooperation in the semi-arid regions of Southern Africa. In Botswana, for instance, the local currency is called the “Pula,” which literally means “rain” but culturally means “may you have the abundance associated with rain.”*

*The ISWF must be able to take these local nuances on board if it is to remain a true partnership amongst equals. If the ISWF evolves into just another Northern-dominated institution, however, it runs the grave risk of becoming delegitimized in the developing South.*

Technicians can be the source of ideas and options that are new to the primary stakeholders. They can also assist in developing additional criteria by which to evaluate options and educate decision-makers about standards in the technicians’ field of expertise.

Water development practitioners should be wary of situations where each party wants to use “its own” technicians. Legitimate differences in technical perspectives may be misconstrued as bad faith or manipulation and bring the entire process to a halt. Moreover, one should recognize that there are disputes within technical fields that may have nothing to do with the situation at hand. A joint technical team can help keep technical differences of opinion limited to the joint team, where they can be addressed on technical merit rather than political preference.

Resistance to new methods or new technologies may stem from ignorance rather than informed opposition. The media, education, outreach, communications packages, and other forms of information-sharing and awareness-raising can be helpful in countering rumors, addressing fears, and informing stakeholders about opportunities for participation.

*Facilitation and Dispute Resolution*

Third-party neutrals can facilitate a wide range of dispute resolution processes. Large international agencies sometimes use the services of an ombudsman. For example, in certain conflicts involving the World Bank, the Office of the Compliance Advisor Ombudsman (CAO) serves as the independent recourse mechanism for the International Finance Corporation (IFC) and

the Multilateral Investment Guarantee Agency (MIGA). CAO is accessible to any community or party with complaints or grievances about the IFC or the MIGA.

Many ombudsmen fashion their services around the practice of mediation. While models vary somewhat, often the ombudsman—like the mediator—is expected to facilitate a mutually agreeable solution, rather than impose a ruling. The primary difference between ombudsmen and mediators is in their relationship to the parties. The ombudsman is often either an employee of one of the parties or an employee of a service under contract with one of the parties. Mediators tend to work as volunteers or on the basis of equitable remuneration from all parties.

Arbitrators are charged with making a ruling. The ruling may be either binding or nonbinding, depending on the terms laid out prior to the hearing. The arbitrator's role in statutory law closely resembles many traditional dispute resolution mechanisms, such those mentioned above and the Bashingantahe of Burundi, a panel of distinguished village elders.

### *Litigation*

Courts of law often adjudicate water-related disputes within their jurisdiction. Usually there is little room for negotiation once hearings get under way. Rulings are made into court orders, which may be enforceable through law enforcement and regulatory agencies.

## Planning and Negotiation

### *Defining an Agenda—Issues to Work On*

Participants and stakeholders need to know the objectives of the initiative and what issues will be addressed through the emerging process (Fisher and Ury 1981). Possible objectives include relationship-building, fulfilling consultation and advisory functions, information gathering, dissemination of information, decision-making, influencing public policy, dispute resolution, and alliance-building, to name a few.

Issues are tangible and negotiable, for example “access to water for drinking and agriculture.” Issues should not be framed in terms of one of the participant's favorite solutions, such as: “Water being used for urban agriculture must be reserved for drinking water.” It is important to frame the issues in language that is acceptable to all stakeholders. For example in a process involving a community and a mining company, the mining company might be reluctant to engage in discussion around “pollution.” The same participants might be more open to discussing “water quality.”

Presenting a broad list of issues early on helps people anticipate and prepare. It may also allow people to accommodate on certain issues in exchange for consideration on other issues that are more important to them. Deciding which issues to address first may be challenging. Some like to start with the low hanging fruit to demonstrate that agreement can be reached. Others prefer to start with the heart of the matter, knowing that if it is resolved many of the other issues will be dropped.

### *Identifying Interests*

Interests are what motivate people to prefer certain solutions over others. For example, unemployed residents of an area proposed for a small scale hydroelectric plant may favor construction of the plant because they would like to work for the construction company and eventually the plant. Their position is that the plant should be built and their interest is future employment. Knowing the interests of the stakeholders helps focus the exploration of solutions and serves as a reality check for subsequent proposals (Gary and Karl 2003).

### *Collecting Information*

As mentioned above under Designing a Process, a peacebuilder's job can be to help expand the number of options, and researchers can offer important contributions by laying out various possibilities, with clear descriptions of the assets and liabilities of each option. They can draw attention to ideas and options that are new or provide information on the efficiency of traditional methods.

Researchers can collect new data relevant to the parties in a dispute or share information and results from other experiences, such as lessons from transnational stakeholder dialogue initiatives (e.g., the World Commission on Dams).

Research can also help participants recognize the global demands that drive local resource pressures and resulting water-related conflicts—from commercial shrimp and salmon farming to massive hydroelectric projects (Conca 2006, p. 3; Campbell 2008).

## **Developing and Exploring Options**

### *Study Circles*

The study circle provides small and diverse groups with venues for in-depth, regular, lengthy discussions and deliberations on a particular topic or issue. Study circles help inform citizens, who are then in a better position to contribute to the planning and management of local natural resources. For example, a study circle might be formed to discover more about a specific interest, such as community involvement in monitoring water quality.

A study circle comprises a diverse group of 10-15 people who meet regularly over a period of weeks or months to address a critical public issue in a democratic and collaborative way. A facilitator serves the group by keeping the discussion focused, helping the group consider a variety of views, and processing difficult questions rather than acting as an expert on the issue. Often a study circle progresses from sessions on personal experience with the issue to sessions providing a broader perspective and, eventually, to action-oriented sessions. Study circles have their greatest reach and influence when organizations simultaneously engage large numbers of citizens—in some cases thousands—in scores of study circles on an important public issue (State of Victoria, Australia 2007).

## **Engaging and Informing Constituencies**

Water-related conflicts invariably involve large numbers of stakeholders and constituents. The success of any peacebuilding initiative invariably depends upon stakeholder satisfaction. Therefore processes need to include ways to periodically involve and inform stakeholders and constituents who are not directly participating in the process. Gauging constituents' reactions

and capturing regular feedback are also important. There are a number of common methods of addressing the challenges of large-scale initiatives. It is possible to:

- Create accordion processes that transcend vertical administrative boundaries.
- Set up thematic advisory groups.
- Organize widespread regular community meetings.
- Survey and poll stakeholders/constituents and disseminate results.
- Organize public hearings.

## Negotiating Agreement

Participatory processes in planning, setting policy, and dispute resolution invariably involve negotiation. Two common approaches in development circles involve:

**Community-based negotiation practices:** Many NGOs seek to create a physical space for negotiation between the communities and the state or, at least, local authorities. Few NGOs, however, invest in the negotiations training needed for community groups to participate more effectively in negotiations with local authorities.

**Professional facilitation:** Local authorities and communities must find ways to work together and preserve key relationships. Professional facilitators with in-depth knowledge of group dynamics, multiparty negotiations, and intercultural interaction can help keep collaborative initiatives moving forward. Using a range of specialized tools, facilitators can help participants integrate thought and action to achieve wiser, more equitable results.

Multiparty negotiations differ from classic two-party negotiations. When large numbers of stakeholders are involved, frequently there is much more business to be transacted and more information to work with. This may require using multiple facilitators. In addition, coalitions may evolve and or shift at different points in the process, or form around specific solutions, making alliances fluid and consensus-building a challenge.

Different stakeholders have different communication and negotiation capacities. Making a negotiation process equitable involves certain safeguards or precautions, such as ground rules, use of neutral facilitators, adequate time for constituent consultation, equal access to information, limiting use of technical jargon, and other techniques that help to bridge the gaps between participants and make the process seem readily understandable, fair, and feasible to all.

Box IV.10 presents a case of where the appropriate use of incentives by third parties helped bring together parties in dispute in order to negotiate an agreement over shared water resources.

“Peacebuilding is about creating process structures which equip community leaders to handle future challenges/shocks through transparent, inclusive means leading to fair, equitable decision-making.”

*Rick Jones, CRS Justice and Solidarity Director for Latin America and the Caribbean*



*Community members in Ethiopia meet a CRS delegation as they prepare to inaugurate a water scheme in Koye Jjeba.*

Jim Stipe

“Power concedes nothing without a demand. It never did and it never will.”

*Frederick Douglass 1857*

### Box IV.10 The Indus Water Treaty: Incentives for Negotiating Agreements

Persuasion and coercion, i.e., carrots and sticks, are two time-tested techniques implemented by adversaries to induce opponents to move in their favor. At times, a third party can serve an important role in bringing adversaries together to cooperate in managing shared water resources. A classic example of this involved several Western countries and the World Bank making available the “carrot” of significant funds for Pakistani dams and Indian irrigation canals upon conclusion of the Indus Waters Treaty in 1960, which partitions the available water resources of the Indus River between these two countries, despite the historic animosity between them (Klare 2001).

## Implementation and Monitoring

### *Advocacy to Win External Support*

Advocacy is a process that utilizes education, organization, research, and influence to effect policy change. Policy change may mean creating new policies, reforming existing policies to obtain greater equity, or ensuring that existing policies are implemented and enforced. Advocacy is also used to hold policymakers accountable for fulfilling their responsibilities.

Employing advocacy in water-related conflicts may be useful at various moments or stages of a process. It may be part of Preparation and Groundwork, or of Planning for a dispute process, as opposed to Implementation. We nonetheless have included it here with the understanding that advocacy sometimes comes into play as a particular justice and peacebuilding initiative—such as a struggle for water rights—begins to be implemented.

Water-related conflict may stem from decisions made within local leadership structures, national legislatures, or other powerful institutions. In these situations, efforts are needed to reform harmful or ineffective policies. Solutions achieved through informal processes may have policy implications. Mutually agreed-upon solutions may need to be made into public policy in order to be perceived as legitimate and enforceable.

Globalization has added a new layer of stakeholders, as evidenced in the previously mentioned Cochabamba “Water Revolt” example (Box I.2) and in the mining-related issues presented in Box IV.11 below. Public policy in one country can have severe repercussions in another country. Corporations have their own sophisticated advocacy efforts, often pushing agendas that are in direct conflict with local needs and priorities. For example, campaigns waged by transnational alliances of civil-society

organizations have been at times quite effective in challenging positions taken by corporations representing the extractive industries.

As for this increasing globalization of solidarity, Ken Conca identifies “two simultaneous global revolutions of communications and democracy” that make it possible (2006, p. 1). The expansion worldwide of access to inexpensive communications technologies has resulted in greater access to information and an explosion in national and global networks. A greater connectedness between affected communities and sympathetic advocacy groups around the world is made possible. Meanwhile, the number of democratic countries have increased from approximately thirty in 1975 (UNDP, 2002) to over 140 countries in 2006 that hold multiparty elections—although noting that in over 100 of them, important civil and political freedoms are still limited (UNDP, 2006a).

#### Box IV.1 | Mining: Bridging the Gap between Those Who Profit and Those Who Suffer

Capital holders in transnational corporate mining interests need to be made aware of the damage being inflicted at the local levels by the companies in which they are invested. In El Valle de Siria, Honduras, for example, where the Canadian–US transnational Goldcorp’s San Martín open-pit gold mine has been operating for six years, 19 of the 23 main rivers of the zone have dried up completely. Monitoring of the other water sources shows the presence of cyanide and heavy metals well above the maximum allowed levels, as defined by the World Health Organization. There is a high index of respiratory, skin, and eye diseases, along with hair loss by children in the area, which medical doctors associate with water contamination by heavy metals. A study completed in 2006 found levels of infant mortality in the Valle de Siria to be 12 times higher than the national average (McKinley 2007).

Advocating for change in a context of similar violence inflicted upon the local environment and communities by mining operations in Bolivia, Bob Dunsmore of the UMAVIDA network of the Presbyterian USA Church concludes,

The people affected by mining contamination have practically no political leverage. Just like the water and the land, they are part of the damaged legacy of the need to grow capital. . . . The shareholders of transnational mining corporations must be made aware of the hard data coming from the affected communities—the blood being spilt and the impact of mining contamination upon the water and the land. . . . We must place corporations in a position of servitude beneath humanity and creation. (Personal communication July 2, 2008)

“In the Valle de Siria of Honduras, where Goldcorp operates an open-pit gold mine, one study found the infant mortality rate 12 times higher than the national average.”

*McKinley 2007*

Examples of different advocacy initiatives include:

- Increasing national investment and international aid for investment in water infrastructure, including storage and flood control (UNDP 2006b).
- Building grassroots support for legislative resolutions and bills that support the recognition and practical implementation of the human right to water (Church World Services 2007).
- Making water management an integral part of national poverty reduction strategies (UNDP 2006b).
- Broadening civil society participation in international river agreements. (Conca 2006).
- Strengthening policies to regulate groundwater use, protect rivers and lakes from degradation, and price irrigation and urban water in ways that encourage its equitable distribution and efficient use (Postel and Wolf 2001).
- Withdrawing subsidies that encourage overuse of water by large users (UNDP 2006b).
- Organizing support for measures such as product certification, consumer information campaigns, and “cradle to grave” accountability (Conca 2006).

Box IV.12 lists potential strategies that NGOs dedicated to fostering social and ecological justice can employ to support grassroots advocacy.

## Box IV.12 Strategies for Supporting Grassroots Water Advocacy

Water-related conflicts often result when sectors with more political or economic clout fail to acknowledge the negative consequences of their water-resources-damaging actions upon less influential populations and the overall ecosystem. Although technological means often exist to mitigate such negative consequences, they are not generally employed, either because of the refusal of the offending party to spend resources or because of the reluctance of government officials to expend political capital requiring environmental protections to be enacted.

For peacebuilding and water development practitioners, the responsibility to support the demands of civil society and community institutions for justice should not be shirked for fear of being considered too “political.” Rather, such civil society efforts reflect a more participatory democracy designed to influence public policy along lines embracing a “preferential option for the poor and vulnerable,” “life and dignity of the human person,” “solidarity,” and “care for God’s Creation,”—all key Catholic social teaching principles.

Yet, how are the demands to be supported in an appropriate and effective manner? CRS El Salvador (2007) and its local partners compiled the following list of successful strategies arising out of their own grassroots experience:

- Obtain technical/scientific reports documenting negative impacts on water resources in order to lend credibility to the demands being made.
- Reach agreements with and demand action from public institutions of the State, especially those charged with the responsibility of protecting water resources, such as national water agencies, ministries of the environment, and regulating authorities.
- Establish alliances with key local and national stakeholders and decision-makers.
- Engage in peaceful protest and non-violent civil disobedience/resistance.
- Convoke national and international media to highlight the problem, making the mitigation of the problem a cause of note.
- Identify a legal strategy to promote the cause, while identifying and making public the violations of existing laws and regulations that result from water-damaging practices.
- Welcome international pressure and support, in the form of organizations, solidarity, regulatory experts, and pressures/actions in home countries of transnational corporations, when involved.
- Support measures that build the self-esteem of the local persons involved in or affected by the water-related conflict.
- Practice communal organizing and empowering measures.
- Emphasize education and awareness-raising.
- Build local capacity and good governance.
- Avoid the interference of political parties with their own agendas.
- Widen mobilization efforts to involve other sectors driven by like-minded goals.

### *Working Out the Details*

Broad project goals and good intentions invariably require additional and more nuanced decisions during project implementation. Different perceptions surface and can be the source of additional conflict if there is not an agreed upon procedure for managing these types of decisions. It is important to set up time for regular meetings, and establish explicit limits of authority in unilateral decision-making, as well as instances that will require participation from greater numbers of stakeholders.

### *Monitoring Agreements*

C. Church and M. Rogers (2006) note that, "Monitoring is an ongoing process that generates information to inform decisions about [an undertaking] while it is being implemented. The decisions that monitoring informs are practical and detailed, and often address an immediate pressing need or question." They recommend that peacebuilding initiatives monitor four variables:

- **Context:** Peacebuilding often takes place in a very fluid situation, where circumstances can improve or deteriorate quickly. Monitoring the context helps peacebuilders anticipate changes, make proactive programming shifts, and ensure the safety of participants, partners, and staff. Context-monitoring involves continuous updating and refinement of the conflict analysis.
- **Implementation of activities:** Implementation monitoring tracks how the initiative is running and provides key information for decision by leaders, participants, and other stakeholders. It contributes to keeping the initiative moving forward.
- **Progress toward results:** Monitoring progress toward results involves monitoring change. This goes beyond reporting on planned versus actual activities and outputs, and focuses on objective-level results.
- **Programmatic assumptions about how change happens:** Periodically, assumptions inherent in the programmatic logic need to be checked to determine if they are still valid. Some assumptions based on the situation may surface through context monitoring. Sometimes this may involve additional collecting of data beyond what was anticipated in the indicators and objectives.

### *Renegotiating as Needed*

New needs, details, and unforeseen circumstances frequently require matters to be renegotiated. Implementers should anticipate this and plan accordingly. Often matters can be easily renegotiated. Other matters may evolve into disputes that require external assistance. Well-designed agreements stipulate the dispute resolution mechanism to be used.

## Applications of Peacebuilding Methods to Conflict Scenarios

Examples of typical water-related conflict scenarios are presented below, along with suggested concrete steps that can be taken to promote conflict transformation. Depending on the specific context of a given water-related conflict and its timing, peacebuilding water development practitioners will shape the suggested conflict transformation strategy to meet either conflict prevention or conflict mitigation needs. The overarching water conflict themes addressed here include:

- 1. Upstream-Downstream Users*
- 2. Outside Interventions*
- 3. Extractive Industries*
- 4. Access to Water Supply*
- 5. Forced Migration Induced by Natural Disaster or Armed Conflict*

For each of the five water-related conflict themes or scenarios, a brief description of the problem, desired outcome, key considerations, and recommended actions are presented. Additional steps are then listed for a more detailed process appropriate to the specific example cited in the scenario. This is intended to assist water development practitioners seeking further input and guidance as they take the necessary steps in shaping their own strategy, specific to the circumstances of the water conflict being faced in the field.

“Water is more than just infrastructure. That would be an offense. If the water initiative is not born of the people themselves, it is worthless.”

*Cesar Abrego, El Salvador Ministry of Environment*

## Scenario I Upstream-Downstream Users

### **Conflict Between Small Upstream Villages and Large Downstream Community, with the Former Demanding Access to the Water System While the Latter Faces Diminishing Quantity and Quality of Supply**

**Problem:** The spring flow supplying the downstream community's water system has diminished dramatically over the years since the system was originally constructed, due to deforestation and overgrazing in the groundwater recharge zone above the spring. Concerns about the quality of the water supply are also growing among the community members as word spreads of widespread agrochemical use and livestock grazing just above the spring. Meanwhile, two smaller villages below the spring that were never connected to the original water system despite the supply main passing through their properties are now also clamoring for the right to be connected. Their lands include the recharge zone of the spring serving the community below. As tensions and desperation on both sides grow, animosity sets in between the community and the two villages. Occasionally disgruntled village members anonymously sabotage the supply main. Heated exchanges regularly take place in the community on market days when the village members come down to trade.

**Desired Outcome:** To achieve a functioning water system with adequate quantity and quality, coupled with water conservation measures able to meet the improved water needs of both the upstream villages and downstream community.

#### **Key Considerations:**

*Measures to decrease water demand:*

- Ration water use.
- Install residential water meters to discourage wasteful practices.
- Revise monthly water use tariffs to more accurately reflect the value of water infrastructure and its administration, based on “use more, pay more” principles. Balance this with cross-subsidizing tariff structures ensuring access to water for impoverished households.
- Install principal water supply meter(s) and calculate system losses by reliably auditing supplies and comparing to total water demand. Take measures to keep water system losses—often due to leaks or illegal connections—to a reasonable minimum.
- Reuse grey water (from sinks, showers, washing) for gardening and irrigation of public green spaces.
- Reduce upper watershed demand on available water resources through more efficient irrigation techniques, e.g., drip irrigation technologies.

*Measures to increase quantity and quality of available water supply:*

- Find new water sources to augment the supply from current source(s).
- Install household rain catchment systems to complement the water system supply.
- Improve quantity/quality of existing supply source through watershed protection measures. These might include:

*Forestry protection*—reforestation, including fruit, coffee, and lumber; tree nurseries; and fuel-efficient cooking stoves/ovens, solar ovens, compressed “paper” fuel logs, etc. Native species should be prioritized, as some tree species, such as eucalyptus, could actually diminish water flows.

*Soil conservation measures*—such as horizontal vegetative barriers, stonewalls, trenches, and terracing.

*Rehabilitation/replacement* of existing source water catchment facilities.

*Sanitation infrastructure*—dry pit and composting latrines, recycling and composting, solid waste disposal facilities, especially near the water source.

*Restriction of livestock grazing* in upper reaches of watershed above the water source.

*Reduced agrochemical use*—such as promotion of organic horticulture, certified shade-grown, and organic coffee.

*Mitigation of other sources of contamination*—for example, in coffee growing areas, install simple treatment facilities to capture and provide primary treatment of wastewater from washing and pulping of the coffee beans.

### **Recommended Actions** (summary):

- Assess the situation: social, technical, participatory analysis.
- Obtain commitments from all key stakeholders.
- Explore social and technical solutions that are sustainable.
- Foster multi-party talks/negotiations.
- Gain upstream and downstream community consensus.
- Produce a formal, legally binding agreement.
- Disseminate the agreement widely.
- Implement and monitor.

Note: Potential “technical” solutions can be employed only after a “social” solution is first achieved.



Photo by Jason Gehrig/CRS, 2008.

“We are sowing water!” remarked Don Miguel of El Salvador. Because of CRS’ soil conservation and aquifer recharge program in the upper reaches of the watershed, farmers’ livelihoods are improving while water sources for downstream community water supply systems are being replenished.

“We need to value the true cost of treating, supplying and distributing water. Take for example electricity. Nobody goes to bed with the lights still on in the house.”

*Pedro Azelaya, El Paraíso, Honduras*

“Our children need to be studying the environment and its sustainable use, just like any other school subject such as math or grammar! What good does it do our children to learn a few words of English or French, if they have no forest to provide for their families as they get older?”

*Reinieri Rodriguez of Las Manos, Honduras*

## Detailed Recommended Actions/Process of Transformation<sup>4</sup>

### *Understanding the Problem*

- Identify needs in order to understand the issues. Gather background information, including history of the project such as why the two villages were not initially connected to the system and what were the types of land use practices occurring before the project and started afterwards, concerns/ needs of parties in conflict, and potential solutions being articulated by key stakeholders, but not yet agreed upon and enacted.
- Determine supply/demand requirements (water needs and available supply assessment). This process of data-gathering leads to a better understanding of the problem. It is not a decision in and of itself, but rather serves to shed light on establishing viable decision-making criteria.
- Meet separately with each community and village to understand its perspective. In that meeting, a small number of representatives should be selected to participate in multiparty talks to take place later.
- Review available documentation and corresponding laws and norms.
- Investigate how other communities in similar situations have handled their water-related conflicts.

### *Peacebuilding Interventions*

- Arrange for multiparty talks. Identify a facilitator for these multiparty talks who possesses good interpersonal skills, a spirit of dedicated service, the ability to remain neutral, and an understanding of the possible solutions. Keep promises made by the facilitator aimed at moving the dialogue process forward, through regularly scheduled meetings. Otherwise negotiations will likely falter and the conflict deepen.
- Consider bringing the multiparty commission into contact with leaders of other communities that have already overcome similar kinds of conflict in the past, so that they can hear directly how the solution to the problem was achieved.
- Based on prior information gathering and technical understanding of the problem, identify possible solutions along with the key stakeholders of the multiparty commission.

<sup>4</sup> This strategy for transforming conflict is based primarily on experience in the field, communicated by Marianela Ramirez and Rodolfo Herrera of CRS El Salvador.

- Consider combinations of measures requiring shared sacrifice and shared benefits of all parties in dispute in order to meet the water needs of all. For example, members of the small upstream villages could be authorized to connect to the existing supply main upon installing residential metering and a system for rainwater catchment. This permission might be granted by the community in exchange for annually verifiable commitments on the part of the villagers to provide “environmental services” in order to conserve the spring. Articulate the justification for payments for environmental services by the lower zone populations to those in the upper zone in light of a fairer redistribution of water-generated resources, since water resources are often generated in the upper zones of the watershed from which the lower zones benefit.
- Arrange the terms of the “environmental services” contract to provide incentives for landowners to gain lower monthly water rates if they stop land use practices that harm water quality and employ soil conservation “water planting” measures. Encourage the outside funding entity to commit to a one-time donation to kick-start the program of contracting environmental services between the providers (the upper watershed farmers) and the community’s drinking water committee. Subsequent years would be paid for by the water users themselves through a percentage of their monthly water rates, often ranging from 5 to 10%.
- Consider other options for source water protection as well, including outright purchase of the land above the water source in order to guarantee sustainable watershed practices.
- Once the multiparty commission reaches a tentative agreement, accompany the representatives as they meet with their respective communities to seek ratification of the agreement. Note that this process of community “buy-in” is essential. Without such consensus, measures initially agreed upon, such as installation of meters or water rationing, could generate even more conflict.

“When community members are involved in all aspects of the water project, they become aware of the need to protect the water source above.”

*Jose Angel Cruz, CRS Mi Cuenca Regional Manager for Central America*



David Snyder

*Farmers of the Chipatula Scheme in Malawi use small, hand generated pumps to irrigate their field and enhance crop yield.*

#### *Project Follow-Up*

- Once agreement is reached on a solution, document and widely distribute the agreement, ensuring that all are properly written and signed so as to be legally binding.
- Realize that perhaps the most important aspect in this peacebuilding-driven process is a change in attitude, moving toward a greater sense of personal and collective responsibility for water resources stewardship.
- Be aware that incentives offered by an external funding entity to bring together the parties in dispute should be used cautiously. Ideally, changes in attitude should be motivated by the recognition that improved inter-community cooperation will benefit all, whether or not a big “carrot” awaits them at the end of the process. Otherwise, in the future, when there is another water-related conflict and no such external incentive exists, the parties might be less prepared to assume the responsibility of reaching creative compromises on their own.

## Scenario 2 Outside Interventions

### Inappropriate Water Development Practices and Technologies as Sources of Community Conflict

**Problem:** Depending upon circumstances, inappropriate water development practices and/or technologies can lead to strife in the “benefiting” community. They also create the potential for conflicts with neighboring communities that have development practitioners dedicated to more sustainable, community-organizing-based water and sanitation programming. The inappropriate practices might include:

- Lack of documented community agreements governing use of the water supply source and, in a growing number of countries, lack of land access easements for infrastructure and piping.
- Setting up water development projects in a way that involves little community commitment or sacrifice; worse yet, paying community members for their manual labor to construct their own community water system.
- No role or contribution to the project required of local government authorities.
- Poorly constructed water infrastructure that fails to work and/or last.
- Infrastructure projects with no community organizing, hygiene promotion, drinking water committee formation, and/or monthly water usage tariffs.
- Use of technologies beyond the financial and/or technical abilities of the community to operate or maintain.
- Failure of the implementing NGOs to establish and follow through on a coherent plan to bring the various stakeholders together to successfully implement the water and/or sanitation project.

**Desired Outcome:** To strengthen community organization and increase water security through the promotion of water and sanitation projects in a socially and technically responsible manner, characterized by mutual respect.

**Key Considerations:** The basic process involves advice (to the communities and local governments) and consent (by all stakeholders) through participatory methods.

**Recommended Actions** (summary):

- Ensure that community and local government commitments precede outside funding.
- Have agreements signed before initiating outside support.
- Promote broad, gender-inclusive local organization.
- Secure appropriate commitments from all stakeholders: (a) benefiting families and community, (b) local authorities, (c) funding entity, and (d) implementing partner.

“Now is the time for a new ‘creativity’ in charity, not only by ensuring that help is effective, but also by ‘getting close’ to those who suffer, so that the hand that helps is seen not as a humiliating handout but as a sharing between brothers and sisters.”

*John Paul II 2000, Art. 50*

“We are an integral part of this water project’s success. We did not receive it freely, but rather at much sacrifice through our contribution in labor and funds. Thus, it is our responsibility that we take care of it well.”

*Irineo Quisbert, Anchallani, Bolivia, community leader 2007*

**Detailed Recommended Actions/Process of Transformation:** <sup>5</sup>

Advise the community and local governmental authorities that outside funding of the water system project is to be put in place only after each phase of their obligation to the project is fulfilled. The failure to make this clear could inadvertently lead to increased likelihood of conflict. This is critical for the following reasons:

- It serves as an incentive for local parties with conflicting water interests to overcome their differences in order to achieve both individual and community gain.
- Failure to undertake the necessary social organizing required to eliminate current and potential sources of water-related conflict prior to initiating construction leads to increased likelihood of a failed project, diminished community organizing ability, and increased conflict into the future.
- If these critical issues (e.g., community control over a water supply source) are not eliminated before outside funds are employed to begin construction, unscrupulous parties can more easily draw the “deep pockets” international development organization into the negotiations. This gives the “hold-outs” enhanced negotiating power to abuse the situation, often by demanding exorbitant sums of money.

Obtain consent in the form of written agreements from all stakeholders. These agreements should be obtained prior to the outside funding entity making an explicit commitment to support the project. These documents should communicate the responsibilities of four sets of stakeholders involved in the water/sanitation project, as presented below:

*The benefiting community commits itself to:*

- Initiate the water supply project effort by providing an official written request inviting potential funding and implementing entities to co-participate in the project with them.
- Achieve consensus backed by written, signed agreements among all stakeholders, granting permission to use water source(s) for the drinking water supply project and permanent easements for right of access to water facilities/piping.

<sup>5</sup> This strategy for transforming conflict is based primarily on experience in the field communicated by Miguel Flores, Darinel Laenez, Marlon Medina, and Julio Zúniga of CRS Honduras, as well as by Braulio Rojas of Suma Jayma in Bolivia. It should be noted that such a formalized, documented approach, while ideal, may not be feasible in some countries.

- o Form a gender-inclusive drinking water committee built upon traditional community structures, charged with organizing communal tasks and accounting for all family contributions (in cash and in-kind labor). When possible, the committee should obtain legal standing and be authorized to administer financial accounts.
- o Identify water service connections for community facilities (such as community centers, health posts, schools) and assume responsibility for their installation and upkeep.
- o Provide local construction materials (such as sand, gravel, rock, wood), their transport to the required project locations, and related tools for such work (such as picks, shovels, wheel barrows).
- o Provide lodging and meals for technicians and workshop trainers during the water supply project implementation.
- o Make available a secure location for storage of all construction supplies required for the project implementation.
- o Enter into dialogue as to the feasibility of residential/commercial water metering in order to facilitate greater fairness, accountability, water conservation, and water use tariffs.

*The benefiting families* commit themselves to:

- o Supply all manual labor required for the project implementation (excavation of trenchlines, carrying of pipe, concrete mixing, etc.).
- o Provide agreed upon financial support to purchase a small percentage of the non-local construction materials, often set to approximately one-half month's worth of income for a typical family in the area. Allow for exceptions, especially for vulnerable households identified by the community itself, e.g., widows, elderly, single mothers, or physically/mentally challenged individuals living in extreme poverty. It should be noted that this expectation of a financial contribution to the project by the benefiting families is not feasible in all countries.
- o Participate actively in the community organizing processes, including attending meetings called by the drinking water committee.
- o Attend all training workshops (topics frequently covered include components of a water supply system, community participation and organization, hygiene and sanitation in the home, operation and maintenance, and protection of the system's water source).

“Never underestimate the power of a people denied their dignity for so long, on the verge of reestablishing it!” referring to a community's ability to exert pressure on its elected officials to transparently meet public funding commitments as a condition for external water project funding.

*Braulio Rojas*



Jason Gehrig

*Non-violent public demonstration against privatization during the Cochabamba, Bolivia water crisis. The banner reads, "It's Our Water, Dammit!"*

“The issue of budgeted project funds and unexpected costs arising during construction is frequently a source of conflict, potentially resulting in mistrust and animosity between former development partners. These conflicts can be prevented, through thorough design proposals with a sufficient ‘unforeseen costs’ budget line item, or mitigated, through flexible change order processes allowing for justified budget increases.”

*Jason Obergfell 2008*

- Assist the drinking water committee in whatever tasks may be required for the construction and upkeep of the water system.
- Agree to pay a monthly water usage tariff upon inauguration of the project, to be managed by the drinking water committee. Taking into account the socioeconomic situation of the community, the monthly tariff should be based on an analysis of the following:

*Administration, operation (including electrical if any), and maintenance costs*

*An additional:*

- 5%-10% (suggested) of the monthly tariff be charged for environmental services, e.g., water supply source protection and groundwater recharge measures
- 10%-30% (suggested) of the monthly tariff be charged for savings for the future replacement of system, i.e., depreciation.

The *local government* and, if applicable, *governmental water authority*, commit themselves to:

- Fund a quality project proposal, including topographic design, budgeting, and construction plans that meet corresponding government-established design criteria. Laboratory results from water-quality-testing of the water source must be included in the design. It should be noted that frequently this step of design/project proposal falls under the responsibility of the funding entity and/or its local implementing partner.
- Prepare a written, signed commitment letter detailing cash and in-kind contributions toward the implementation of the project.
- Acknowledge that external funding for each phase of the project is dependent upon the local government’s agreed-upon share first being contributed in a transparent manner.
- Assist the community with access to heavy equipment for obtaining and/or transporting local construction materials, if possible.
- Supply technical oversight and support during and after the project’s implementation.

The external funding entity and its implementing partner commit themselves to:

- Assure that a quality design and project proposal is in place to guide the project's implementation, either through a substantial review of existing design or through carrying out the design themselves.
- Foster open lines of communication between all parties throughout the project, employing strategic use of external funding as leverage, if necessary, to encourage partners to fulfill their commitments.
- Fund non-local construction materials (such as piping, cement, rebar) and skilled labor required by the project which are not paid for or provided by other parties (such as local governments, families), as identified in the project proposal.
- Recognize that budgets need to have a certain level of flexibility given the unknowns, including volatility of foreign exchange rates, commodity prices, and fluid nature of grassroots development.
- Provide capable technical and engineering staff to supervise construction and lead all works requiring skilled labor (spring catchment works, storage tanks, boreholes and pump installation).
- Provide professional trainers to lead community workshops.
- Meet project-scheduling milestone dates, not exceeding a maximum of six months in the case of typical community water projects. Maintain flexibility so as to be respectful of local cultural practices and beliefs that might impact the project's implementation and timeline.
- Administer and keep up-to-date inventory on all non-local construction materials to be used in the project.
- Accompany and provide support to the newly formed drinking water committee, including workshops and on-the-job training in operations, maintenance, and administration including financial skills.
- Given that information regarding the water project costs are of a public nature, prepare and make available in the offices of the local government and implementing NGO monthly project updates and final project reports, including financial statements, narratives, and photos/video.

“If a marginalized community can make the dream of obtaining access to safe water a reality, they might dare to dream of creating a cooperative for their wool products, or of installing latrines, or of any other number of development efforts to improve their lives, and restore their sense of human dignity.”

*Jason Gehrig 2003, p. 33*



*Health workers in Aceh, Indonesia discuss immunization strategy during a 2007 training session.*

Sean Sprague

“Decisions must be judged in light of what they do for the poor; what they do to the poor; and what they enable the poor to do for themselves.”

*U.S. Conference of Catholic Bishops, 1986, Art. 24*

## Scenario 3 Extractive Industries

### **Extractive Industries, Especially Metal Mining, Negatively Impact Local Water Quantity and Quality, Ecosystems, and Human Health and Livelihoods**

**Problem:** Prior to the global financial crisis of 2008, mining operations were expanding tremendously in response to rising commodity prices for minerals such as gold, zinc, and copper. While the mining industry frequently promises to bring benefits, such as increased local jobs and revenues, to the state, the realization of this promise varies greatly, as it depends on the type of mining operation (low-skilled, labor-intensive vs. technical, capital-intensive) and the effectiveness and enforcement of applicable state laws and regulatory oversight. Any such benefits, moreover, must be weighed against the frequently negative environmental and human health consequences that result from:

- The siphoning off of local, available water resources for mining operations.
- The likely contamination of water resources both during and for many years after the mining operation.

Thus, water-related conflict and metal mining often go hand-in-hand.

**Desired Outcome:** To improve the quality of life for all by supporting social equity measures of local job creation and increased public revenues, and by demanding enforcement of regulations to prevent or mitigate negative environmental and health consequences due to metals mining. Alternatively, where this is unfeasible, to support locally-led measures seeking to ban open-pit, metal mining and the use of dangerous chemical substances, e.g., cyanide or mercury.

**Key Considerations:** In dealing with water-based conflicts arising from the operations of extractive industries, emphasis first must be placed on collecting and analyzing information and second on developing advocacy campaigns to bring about changes in both mining laws and operations. Most of the steps to be taken involve advocacy measures that require an understanding of the technical, legal, and social aspects of the specific mining operation. Obviously, short-term mitigation efforts to protect local populations can include finding alternative, improved sources of water for human and livestock consumption. But such short-term measures taken alone, without an approach to address the more structural injustice issues, would be unethical. They could actually serve the mining operation's narrow interests, by pacifying the local communities' demands for measures to prevent and mitigate contamination of their water and land.

**Recommended Actions** (summary):

- Examine local needs, interests, and concerns.
- Research extractive plans, corporate track record, and relevant laws.

- Promote education of local communities.
- Strengthen local capacities to organize, advocate, document, negotiate, raise funds and defend their rights.
- Foster unity, key alliances, and coalitions.
- Gain religious leaders' support.
- Monitor and denounce environmental, health, and other violations.
- Advocate for better laws and implementation both nationally and in corporations' home countries.

Note: Problems, considerations, and actions may vary in cases of extractives other than metal mining.

### Detailed Recommended Actions/ Process of Transformation:<sup>6</sup>

#### *Local Peacebuilding Interventions*

- Listen to the concerns being expressed by members of the communities surrounding the mining operation. Together with the communities, identify their available resources in terms of human capacity, social networks, and cultural values. Likewise, ascertain what the community members see as the principal needs that outside specialists can help them meet.
- Obtain and review documents related to the specific mining operation. What kind of water resources will the mining operation require? What are its proposed contamination prevention measures? How many and what kind of local jobs will actually be created? In many cases, mining operations have become so technologically advanced and capital-intensive that as much as half of the operations involve foreign technical specialists.
- Facilitate the strengthening of the community's ability to organize, advocate, and understand the technical aspects of mining. Equip community leaders with cameras and camcorders to record mining abuses. Teach them how to navigate the legal system to perform timely, formal denunciations, backed by evidence.
- Assist community leaders when they elect to dialogue with the mining companies and/or government. Build upon their existing negotiating skills as they seek a voice at the decision-making table alongside mining and government representatives.

“The biggest issue is the one looming over every modern industrial gold mine: What happens when the ore that lured the miners here is gone? At Yanacocha for over 13 years, Newmont has moved mountains for gold—30 tons of rock and earth for every ounce. By the time it is through, the company will have dug up a billion tons of earth. Much of it will be laced with acids and heavy metals. . . . In the long term, the company's own tests show that all the components are in place for the huge piles of rock to leak acids that will pollute surface and groundwater.”

*J. Perlez and L. Bergman 2005*

<sup>6</sup> This strategy for addressing the conflict generated by open-pit gold mining in Honduras and Bolivia is based primarily on experience in the field, communicated by Carlos Patiño and Juan Pablo Duron of Caritas Honduras and Evan Cuthbert of the Maryknoll Mission Institute in Cochabamba, Bolivia.

“The sense of solidarity was palpable. The gathering of community leaders from all over the Americas dedicated to challenging transnational mining corporations needed to listen and share with each other, yet not solely for the purpose of exchanging information. It was evident that some came from situations in which they felt very much alone in their struggle to resist destructive mining practices and needed the emotional and spiritual support.”

*Evan Cuthbert 2008*

- Support local community stakeholders in forming a united advocacy committee and campaign, identifying key allies throughout all sectors and levels of government. Remember that women can play an especially important role, as they are more closely bound to issues of water and health, especially for their children.
- Emphasize the ongoing vigilance that local organizations and communities must exercise, for example, to ensure that government-required environmental audits for new and existing mining operations be undertaken by companies independent of the mining corporation.
- Continue monitoring during mine-closure operations, to ensure that the correct processes are fully implemented to achieve environmental restoration, including measures to minimize the risk of ongoing acid mine drainage problems.

*National and International Peacebuilding Interventions*

- In tracking affected communities and learning about apparent violations, water-related peacebuilders need to study the country's relevant water and mining laws. Peacebuilders should educate themselves as well as the community stakeholders on all aspects of metal mining. What do the national laws governing mining, water, public health, and the environment have to say in the matter? What experiences have neighboring countries had? Mining laws in many countries were “reformed” in the 1980s and 90s to favor corporate mining interests as a result of pressure from the World Bank and IMF to adopt structural adjustment policies. These “reforms” often included:
  - Giving the mining concession holder the right to use any amount of water it deemed necessary from sources both inside and outside of the mining concession area.
  - Permitting the mining concession the right to arrange for entire communities to be moved, if necessary.
  - Significantly reducing royalties and state taxes that the mining concession has to pay.
- Pressure relevant government agencies to carry out their regulatory enforcement functions, e.g., national water agencies to measure impact on local groundwater and surface waters; national environmental protection agencies to monitor impact on water quality parameters and ecosystem; national health offices to determine impact on human health.

- Lead legal studies that provide backing for governmental regulatory and judicial actions.
- Seek funding for resource-starved local communities and governmental regulatory agencies which, unlike the transnational mining corporations, are often unable to contract required technical expertise for effective oversight and monitoring. An example of relevant technical expertise in this case would be hydrogeologists to perform independent analysis to determine the impact of mining on local water resources.
- Coordinate with the local scientific community to perform independent water quality, quantity, and health impact studies on an ongoing basis.
- Research the track record of the transnational mining corporation in other countries. Make contact and coordinate strategies with local organizations in countries that have already dealt with the mining corporation.
- Denounce environmental and human health violations backed by credible government or independent studies, utilizing local, national, and international means of communication.
- Form national coalitions promoting citizen participation in decision-making related to mining.
- Participate in regional and global mining justice advocacy conferences and networks.<sup>7</sup> Recognize the value of such international forums in networking for solidarity—in terms of information as well as moral support. Moreover, such gatherings help articulate what mining policies should be instituted in order to maximize benefit for local economies and minimize ecological damage. By doing so, “divide and conquer” tactics employed by unfettered transnational capital may be at least partially overcome and challenges/alternatives to the unsustainable “race to the bottom” in terms of environmental protection, worker rights, and state revenues are put in place.
- Monitor government regulatory actions, or the lack thereof.
- Sponsor workshops and other continuing education opportunities led by national and international mining regulatory experts, aimed at capacity-strengthening for local stakeholders, civil society professionals, and public regulatory officials.

“This open pit gold mine is like a time bomb. The mining corporation will soon leave, but the contamination of our land and water will remain for generations.”

*Rodolfo Arteaga 2008*

<sup>7</sup> For an example of a regional-based approach to advocating for mining justice, see El Observatorio de Conflictos Mineros de América Latina (Latin American Observatory of Mining Conflicts), [www.conflictosmineros.net](http://www.conflictosmineros.net).

- Sponsor open, participatory processes with local and national stakeholders to craft new proposed legislation governing mining. Once a proposed bill is agreed upon, take public measures to pressure the government to pass the law.
- Seek both legal and moral victories. If the courts are not favorable to the people's concerns, consider contacting regional and global institutions promoting equitable and ecologically sustainable development.<sup>8</sup>
- Invite international mining experts to evaluate mining operations and mine closure plans. Not infrequently, operating and closure plans being implemented by transnational mining corporations overseas would be deemed unacceptable under the regulatory conditions in their home countries.
- Coordinate with international advocacy partners to educate shareholders of transnational mining corporations regarding their company's abuses. Welcome visits by international delegations, including legislators, in order to promote education of and solidarity with actors from the countries of origin of the transnational mining interests. Push for national laws in the home countries of transnational mining corporations which hold their mining companies accountable for negligent behavior overseas.
- Educate associations of religious leaders (e.g., national and regional bishop's conferences as well as ecumenical and inter-faith organizations) on the issues, supporting international exchanges between religious peers in order to prepare pastoral letters and statements, and advocate on behalf of the promotion of laws respecting human rights and the environment.
- Be pro-active in educating communities on the options and pitfalls involved where future mining operations may occur. Connect them with other communities that have already been impacted by mining to learn first-hand what the pros and cons are likely to be.

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<sup>8</sup> In its 2007 Fourth Public Hearing, the Tribunal Latinoamericano de Agua (Latin American Water Tribunal)—an autonomous international environmental justice organization seeking to contribute to the solution of Latin American water-related conflicts—ruled in favor of the community environmental group opposed to the contamination and misuse of the local water resources by Goldcorp's San Martín open-pit gold mine in the Siria Valley of Honduras.

## Scenario 4 Access to Water Supply

### Conflict Between Families Connected to a Water Supply System and Other Families Not Connected

**Problem:** When a new community water supply system is initiated, there are frequently some families who choose not to participate. This may be due to a lack of confidence in the water system ever functioning correctly (i.e., water arriving to their homes), or even being installed. Seasonal migration may also impede some families from participating. Once the project budget is set and the labor begins, it can be difficult to allocate sufficient water for additional participants.

For those families who made the ill-fated decision not to participate in the project from the onset, seeing their neighbors achieve access to improved water in their homes causes regret and, along with it, the seeds of conflict. As an issue of fairness, none should be denied access to water. Yet fairness also dictates that those who contributed their labor (often several months of work), as well as cash, should be rewarded for their sacrifice.

The desperation of excluded families can become so intense that third parties may be pulled into the conflict. Until an equitable, just compromise can be achieved, a community may suffer through much hostile division.

**Desired Outcome:** Access to improved water in the homes of all, with a fair distribution of sacrifice borne by all community members.

**Key Considerations:** A sequence of steps is recommended for these conflicts. In the earlier phases, the emphasis should be on conflict prevention, primarily through encouraging the maximum number of families to participate in the water project by overcoming their distrust or other obstacles. In the latter stages of the project, as well as in post-project scenarios, the need is for conflict mitigation, which seeks to help both sides in the conflict—the included and the self-excluded—to recognize the just claims being made by the other side.

#### Recommended Actions (summary):

- Encourage maximum participation.
- Design and implement for maximum coverage.
- Foster community consensus, unity.
- Work with local authorities, assemblies, committees.
- Negotiate equitable agreements and commitments for additional or previously excluded families.
- Document and update all agreements.

#### Detailed Recommended Actions/ Process of Transformation:<sup>9</sup>

##### *Initial Community Visit*

- Communicate the minimum percentage of families in the community required to participate in the project before external funding is made available. Dialogue with community leaders to establish a significant minimum number — at least 80% participation is not uncommon.

<sup>9</sup> This strategy for addressing conflict over access to water supply, specifically between original project participants and new families demanding affordable access, is based primarily on experience in the field, communicated by Felipe Gonzales of El Palomar, Honduras, and on various water projects with Suma Jayma in Bolivia.

“In the context of watershed development efforts, peacebuilding requires paying as much attention to the sets of relationships as to the technical aspects.”

*Rick Jones 2008*

- Design the water supply system to bring improved water to any community members (if household tapstands and/or hand pumps) or zones (if public taps or community wells) seeking to participate in the project. If not technically or financially feasible to extend piping (e.g., households above the hydraulic grade line of the gravity system, or at extreme distances), speak with the family/zone to identify alternatives, such as hand pumps. If funding limitations make supplying water to the entire community in one fiscal year impossible, establish a multi-year, consecutive-project phasing plan until all zones are reached. Make every effort not to create tension in the community by failing to provide water infrastructure to all zones.
- Encourage as many families as possible to participate in the initial project planning and implementation. Communicate to all, especially the naysayers, the financial difficulty they will face if they change their minds and want to connect to the water system after the project has already been constructed. In community-wide assemblies, explain how the budget to be submitted with the project proposal for funding requires a thorough design, including the specific number and locations of families to obtain access to improved water.
- Be patient and understanding of those community members who are distrustful. Keep in mind that rural marginalized communities have often been deceived, both by elected officials and by NGOs that failed to live up to the expectations they raised. Help overcome such distrust by inviting representatives from another community that has completed a similar kind of project to speak to the families about their own experience.

#### *Project Approved for Funding*

- On the funding side, establish a project budget with an adequate “extras” line item which allows flexibility for accepting new families who now desire to enter into the water supply project. It is important that these new families are willing and able to meet the same participation requirements as the rest, prior to construction beginning.

#### *Project Implementation*

- Prior to the water system’s inauguration, the assembly of water users should approve its drinking water committee statutes, which needs to include the determination of connection fees for future water users who did not participate in the original construction of the system. Typically, having committed so much of their time to the project, the participants

will want the full value of their labor included, plus any monetary contributions they have made. Moreover, any piping or other construction materials required to extend the system to a new home after the project inauguration is often also the responsibility of the new user, or of an outside funding entity, such as the local government.

### *Project Completion*

- Sooner or later, following the inauguration of the water supply system, new families desiring to connect to the system will make their needs known. More often than not, they will be shocked by the connection fee the existing water users have established for new families to join.
- Take, for example, community XYZ, where each original participating family in the water system project contributed \$15 in cash toward construction materials, as well as 50 days of manual labor. Their connection fee for new users will likely reflect the value of these in-kind and cash contributions:

Cash contribution by family during project implementation: \$15  
 Value of manual labor per family (50 days x \$4 per day): \$200

**Total project contribution by participating family: \$235**

In such a case, the connection fee for new families would be \$235, an amount out of reach for almost all rural families living on subsistence farming. Moreover, this doesn't even include the cost for piping and other construction materials that, if not paid by outside sources, now often falls on the shoulders of the new families as well.

- Recognize that for the first half year or so following the inauguration, this community-set connection fee will probably be non-negotiable. Meanwhile, resentment on the part of the new families desiring affordable access will be on the rise, as a sense of helplessness sets in, coupled with a fear of being taken advantage of by the drinking water committee members.
- Avoid overstepping boundaries, such as bypassing the authority of the legitimate drinking water committee acting on the mandate of the water users assembly. When facing appeals from the new families to intervene as the outside donor/implementing NGO, it is probably best to refer them to their drinking water committee, noting that the issue is an internal community matter. With time, however, if the issue is still not resolved, a subtle support for compromise may be in order, as suggested below.

### *Project Follow-Up*

- Typically after some time has passed and additional families continue without success to demand affordable access to the system, take up the issue of connection fees again with the assembly of water users and its drinking water committee. While recognizing the justice issues raised by both sides, encourage the drinking water committee to be flexible in developing possible solutions that can bridge the growing rift within the community of those with water access and those without.
- Discuss possible compromises that appear fair to both sides. For example, propose a reduced cash amount for the connections fee to be paid by new users, along with an interest-free installment plan. In exchange, new families would agree to provide services in-kind through manual labor in upkeep/expansion of the water system.

- As outside parties to the conflict (such as local governments and NGOs), consider providing incentives for reaching a compromise, for example, by offering to supply the required construction materials for the system expansion once the parties in conflict achieve consensus.
- Further advance this compromise approach by reminding the original water system users that, one day, coming ever closer, their own children may want to connect their new families to the water system, assuming they can afford to do so.
- Finally, document any agreements reached, including the updating of the statutes and regulations governing the community's drinking water system.

## Scenario 5 Forced Migration Induced by Natural Disaster or Armed Conflict

### Emergency Response to Disasters/Armed Conflicts Results in Displaced Persons or Refugee Camps

**Problem:** Camps for refugees (persons crossing international borders) and/or internally displaced persons (within country of origin) are often conflict-prone. This is true whether the displacement was caused by natural disasters, wars, or persecution. People caught in these situations usually feel a profound sense of violation, loss, and vulnerability, and possible hostilities may play out between different groups of victims, victims and perpetrators, and even between existing host communities and recent arrivals. Inadequate water and sanitation services aggravate existing tensions in such volatile situations and may lead to further conflict. Although the welfare of those forced to migrate remains the legal responsibility of the state of which they are citizens, foreign nations and NGOs are often called upon to provide disaster relief to mitigate the negative effects of displacement.

**Desired Outcome:** The proper functioning of refugee/internally displaced person camps which meet the basic human needs—including water and sanitation services—of those forced to migrate. Actions to promote this outcome must be informed by an understanding of the psychosocial, mental health, and human rights needs of the population, taking into account particularly the condition of vulnerable persons, such as women, children, and the infirm.

**Key Considerations:** The technical and social standards for emergency camp situations have been well developed in guidelines set out by the Sphere Project and by the United Nations Inter-Agency Standing Committee. The steps shown below are a brief introduction to the kinds of approaches, attitudes, and concrete actions required to address water- and sanitation-related needs of displaced persons forced to flee their homes. All steps presented here are taken from key references.

#### Recommended Actions (summary):

- Meet established humanitarian care standards.
- Attend particularly to vulnerable persons (women, children, infirm).
- Meet established standards for the provision of water supply, sanitation, and hygiene.
- Ensure proper management, safety, social protection.
- Attend to host communities as well as the displaced.
- Foster appropriate gender-specific and culture-specific arrangements.
- Ask water committees and other community groups to help prevent and manage conflicts.
- Monitor and respond promptly to group tensions.

“In some emergencies, poorly lit, unlocked latrines have become sites of gender-based violence, including rape, whereas in others, conflict at water sources has become a significant source of distress.”

*Inter-Agency Standing Committee 2007, p. 179*

“In disaster response situations, we must take off our agency and ideological hats, and find out what the people need. . . . Aware of what we bring, we must also be respectful of what local resources (human capacities, social networks and cultural practices and values) already exist.”

*Wessells and Ager 2008*



Karl Grobl

Needs were vast for people in camps along the Indian coast following the 2004 tsunami.

#### Detailed Recommended Actions/ Process of Transformation

- Be well-versed in and meet the standards of care articulated in the following key references. These standards have been developed by international humanitarian aid organizations over years of experience in emergency settings, in response to natural disaster and violence- and persecution-induced forced migrations:
  - ICRC, IFRC et al. (1994). Code of Conduct for the International Red Cross and Red Crescent Movement and NGOs in Disaster Relief.
 

This “Code of Conduct” seeks to safeguard high standards of behavior and maintain independence and effectiveness in disaster relief.
  - Sphere Project. (2004). Humanitarian Charter and Minimum Standards in Disaster Response.
 

The Sphere Handbook identifies minimum standards to be attained in disaster assistance, in each of five key sectors: water supply and sanitation, nutrition, food aid, shelter, and health services. The Humanitarian Charter affirms: the right to life with dignity, the distinction between combatants and non-combatants, and the principle of non-refoulement, i.e. the protection of refugees from being returned to places where their lives or freedoms could be threatened (16).
  - Inter-Agency Standing Committee (IASC) Guidelines, including:
    - (2008). *Human Rights and Natural Disasters: Operational Guidelines and Field Manual on Human Rights Protection in Situations of Natural Disaster.*
    - (2007). *Guidelines on Mental Health and Psychosocial Support in Emergency Settings.*
    - (2005). *Guidelines for Gender-based Violence Interventions in Humanitarian Settings: Focusing on Prevention of and Response to Sexual Violence in Emergencies.*
    - (2003). *Guidelines for HIV/AIDS Interventions in Emergency Settings.*

The IASC references are intended to give guidance on social considerations relevant in working towards meeting the minimum standards established by the Sphere Project. These considerations are critical since, depending upon how such supports are provided, they can either improve or harm the mental health and psychosocial well-being of the affected population (179–182).

- Meet the minimum standards identified by the Sphere Project for water supply, sanitation and hygiene promotion, specifically in the following areas: hygiene promotion, water supply, excreta disposal, vector control, solid waste management, and drainage. Refer to the Sphere Project for key indicators under each of these minimum standards for water/sanitation (51–102).
- As communicated in the IASC guidelines: “Plan to provide water and sanitation for all people (with appropriate targeting of people at risk) in a manner that supports safety, dignity, privacy, and non-violent problem-solving. Include specific social considerations in the provision of water and safe, culturally appropriate hygiene and sanitation facilities (2007, pp. 28–29).”
- Enact the recommended IASC key actions regarding social considerations when working towards the minimum water and sanitation standards set out by the Sphere Project (IASC, 2007, “Action Sheet 11.1,” pp. 179–82). As an example of these key actions, consider the following for issues of safety and protection, as well as for managing water-related conflict within the camps:

*Promote safety and protection in all water and sanitation activities.*

- Ensure that adequate water points are close to and accessible to all households, including those of vulnerable people, such as those with restricted mobility.
- Make waiting times sufficiently short so as not to interfere with essential activities, such as children’s school attendance.
- Ensure that all latrines and bathing areas are secure and, if possible, well-lit. Providing male and female guards and torches or lamps are simple ways of improving security.
- Ensure that latrines and bathing shelters are private and culturally acceptable and that wells are covered and pose no risk to children.

“In Afghanistan, for example, girls and women have reported that the lack of separate women’s latrines is a major concern, since the exposure of any part of their bodies is punishable and could shame and dishonor their families.”

*Inter-Agency Standing Committee  
2007, p. 179*

“In some areas women and children walk miles to get water—which further increases their risk of attack.”

Joseph Ciza Nakamina,  
UNICEF Canada 2006



David Snyder

Young girl in Chad makes her way home with water for the family. Fetching water places huge demands on their time and often limits girls' exposure to schooling.

*Prevent and manage conflict in a constructive manner.*

- When there is an influx of displaced people, take steps to avoid the reduction of water supplies available to host communities and the resulting strain on resources.
  - Prevent conflicts at water sites by asking water committees or other community groups to develop a system for preventing and managing conflict, for example, by rotating access times between families.
  - Consider trying to reduce conflict between neighboring displaced groups or between displaced and permanent residents by encouraging the conflicting groups to cooperate in building a common well.
- Note that if the host population, which has not been directly affected by the disaster, suffers from similar shortages of water and sanitation, shelter, clothing, and essential health services as those affected by the disaster currently living in the nearby displaced persons camps, relief should also be provided to [the host population] on an equitable basis (IASC 2008, p. 32).
  - Carry out gender-based actions for the water and sanitation sector in emergencies. A sampling of IASC recommendations in this regard includes (2005, pp. 46–48):
    - Identify safety and security risks for women and girls and incorporate them into the design and construction of water and sanitation facilities, keeping in mind that communal water and sanitation facilities which are not central, accessible, well-lit, or well-secured can increase the vulnerability of women and girls to sexual violence.
    - In the context of emergencies in which people are very susceptible to illness and death from water-borne diseases, it is essential that all users, especially women and girls, have a voice in identifying risky hygiene practices and conditions in order to promote shared responsibility to reduce risks.
    - With the frequent presence among displaced populations of single- female-headed households, adolescents, and unaccompanied female children, water and sanitation facility planning should be based upon women's input so as to maximize the safety and minimize the burden of those tasked with water-related responsibilities.

- Likewise, place emphasis on other especially vulnerable sectors of the displaced persons population. The following is a sampling of key actions identified by IASC for inclusion in water and sanitation programming to meet the needs of families affected by HIV in emergency situations (2003, pp. 42–43):
  - Help dispel myths and misconceptions about contamination of water with HIV, thereby reducing discrimination against people living with or affected by HIV/AIDS. Common misconceptions include the following:
    - Sharing a well with people who have HIV will cause contamination of the water point.
    - People can become infected with HIV/AIDS due to groundwater pollution near the burial sites of those with AIDS.
  - Facilitate access to water and sanitation for families with chronically ill members. People living with HIV/AIDS may have difficulty obtaining water due to stigmatization and discrimination, limited energy to wait in queues, or insufficient strength to transport heavy water containers.
  - Design water systems to take into account that, partly as a consequence of HIV/AIDS, it is increasingly children and older people who fetch water. Make sure that pump handles are not too high, that pumping is not too difficult, and that the walls of the well are not too high.
  - Facilitate access to extra water for caretakers of people living with HIV/AIDS. They may need greater than usual quantities of water to wash sheets and blankets of chronically ill family members and to bathe the sick more frequently.
  - Make extra efforts to ensure that the voices of people living with HIV/AIDS are heard either directly or indirectly, by representation; infected people and their families can be inadvertently or intentionally excluded from community-based water decision-making.

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## Conclusion

The purpose of this document is to inform and guide practitioners of water development, human rights and peacebuilding to more effectively promote water as a force for unity and life, rather than division and violence. Part I provided data about water security and inequities on a global scale; described concrete conflicts and their causes; and presented principles, paradigms and protocols for water cooperation. Part II framed water development within a peacebuilding paradigm, presented tools and techniques, and suggested appropriate actions in several typical conflict scenarios. The Appendices at the end of this report summarize various approaches to risk assessment, point to valuable online resources, and provide the key references used in the preparation of this text. To some, the document may seem overly abstract. To others, too full of practical details. To still others, the balance may seem just about right. Our hope, in any case, is that this document opens a broad window on the often turbulent world of water and provides a focused framework for practitioners seeking to prevent and mitigate violent confrontations around water - the most vital of natural resources.

This report is a work in progress and, hopefully, one that will stimulate further inquiry. It may serve as an invitation to plunge more deeply into specific core issues, such as transboundary conflicts or human rights, or a call to follow a number of currents that were not fully explored, such as those around gender and water. It may also lend itself as a basis for organizational training courses. The possibilities are many. Overall, CRS believes this effort to be a unique contribution to the expanding literature focused on water and conflict. The document also complements recent works, such as *Conflict Resolution and Negotiation Skills for Integrated Water Resources Management* (Cap-Net UNDP, 2008). A next step within CRS will be to test the utility of this work in the field and to determine if it can provide effective guidance for practitioners. Comments and suggestions are welcome.

# Appendices

Artist: Eleuterio Chambi Chura of El Alto, Bolivia, 2007.  
Reprinted with permission.





## Summary of Lines of Inquiry for Evaluating the Risk of Water-Related Conflict

Complex technical and social challenges tied to water resources await the peacebuilding development practitioner. The lines of inquiry given below are aimed at supporting the conflict prevention/mitigation efforts of the water development practitioner in the field. Though neither all inclusive nor relevant to all situations, the list can help facilitate the integration of water resources management and conflict prevention/mitigation in the early stages of planning. This process is essential to “mapping conflicts” — an integral element of water conflict assessment required for any water-related programming.

### Socio-Economic Considerations

1. *Who owns the water and the land? And who does not?*
2. *Does water policy favor one group over another? If yes, how?*
3. *What are the grievances of those whose access to water is most marginalized?*
4. *Is flooding, lack of water, or new dam construction depriving people of their livelihood or forcing them to migrate?*
5. *How is the water-related conflict linked to other current conflicts?*
6. *How do historical differences and unresolved conflicts manifest themselves in the current conflict over water?*
7. *In any given water conflict under consideration, have prior attempts already been made at reaching a solution? If so, what took place?*
8. *How do water-related corruption and lack of transparency contribute to ongoing social inequity?*
9. *Is the cost of accessing the potable water system (e.g., connection fees, monthly consumption tariffs) within reach for the most vulnerable sections of the population?*



Photo by FUNDESA, 2008. Reprinted with permission.

Conflicts and contamination went hand in hand in the use of this previously unimproved community spring of Honduritas, El Salvador, used for drinking water, clothes washing, and livestock watering. Through innovative engineering, the same three uses continue to this day, but improved infrastructure has eliminated water contamination and thus the source of past conflict.

10. *If the administration of local government water services was privatized, what is the history of that process? Was such a decision made autonomously, or under pressure from foreign multilateral lending institutions? What are the controversial terms of such privatization contracts? Pros and Cons? What are the cultural attitudes of the local people toward commodification of water? Is the state able/willing to effectively monitor and regulate such arrangements?*
11. *What water-related documents produced on the local, country, and international levels by religious and other civil society leaders might contribute to transforming conflicts?*<sup>10</sup>

### **Institutional/Political Considerations**

1. *How are ownership and use of water legitimized? By whom?*
2. *Who controls access to water, and how do they grant access?*
3. *What are the accountability mechanisms for institutions regulating the use and distribution of water?*
4. *What elements of water governance have been decentralized? Which remain centralized?*
5. *Whether publicly or privately administered, does the governance structure of municipal water services allow for effective oversight through user participation in decision-making?*
6. *How do statutory and customary laws regarding water/land ownership differ?*
7. *Are water management mechanisms (customary and formal) effective, enforced, and perceived as fair?*
8. *What institutions, rules, and regulations govern water resources? What are these policies based upon (colonial law, post-colonial or modern law, traditional/customary law)? Do they overlap or contradict each other?*
9. *How is competition between different water users (e.g., mining, agriculture, hydroelectric, potable water supplies, overlapping governmental jurisdictions) managed?*

### **Environmental Considerations**

1. *What present and future environmental risks exist that threaten a given area's water supply sources?*
2. *How does the failure to implement integrated water management practices on a watershed basis contribute to environmental degradation, negatively impacting people's livelihoods?*
3. *In what ways do upstream behaviors result in downstream pollution?*
4. *How do inadequate human sanitation practices affect water quality?*
5. *Are there demand-side management alternatives (e.g., conservation measures) to large-scale supply-side projects (e.g., dams)?*

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<sup>10</sup> For an example of religious leadership seeking to inform the public conscience regarding just water governance policies, see the Bolivian Episcopal Conference (2003)

### Additional Resources Available Online

#### **Transboundary Freshwater Dispute Database**

Providing an overview of water conflict prevention and resolution, this website includes a register of international river basins and searchable databases covering international water events since 1948 and international freshwater treaties since 1820. Sponsored by Department of Geosciences, Oregon State University, Dr. Aaron Wolf.  
<http://www.transboundarywaters.orst.edu/>.

#### **UN-Water**

Created in 2003, UN-Water is the official United Nations mechanism for tracing follow-up to the water-related decisions reached at the 2002 World Summit on Sustainable Development and the Millennium Development Goals, particularly the goal to reduce the number of people lacking drinking water by half by 2015.  
<http://www.unwater.org>.

#### **World Water Council**

International platform of private and public entities established in 1996 in response to increasing concern about water issues on the part of the global community. Every three years, the Council organizes the World Water Forum.  
<http://www.worldwatercouncil.org>.

#### **Water for All—Food and Water Watch**

Works with coalition partners in communities around the world to challenge the privatization of water. Its goal is to defend water as a public resource, to ensure access to safe and affordable water, and to promote recognition of the right to water internationally. <http://foodandwaterwatch.org/water/world-water>.

#### **ToolBox for Integrated Water Resources Management**

A collection of good practices for managing water resources at all levels. Sponsored by the Global Water Partnership.  
<http://www.gwptoolbox.org>.

#### **Global Policy Forum:Water in Conflict**

The articles and analysis on this website examine international water disputes, civil disturbances caused by water shortages, and potential regulatory solutions to defuse water conflict. <http://www.globalpolicy.org/security/natres/waterindex.htm>.

#### **OECD Development Assistance Committee's (DAC) Network on Conflict, Peace and Development Co-operation**

The DAC Network on Conflict, Peace and Development Co-operation is the international forum that brings together conflict-prevention and peacebuilding experts from bilateral and multilateral development agencies, including from the UN system, the EC, the IMF, and the World Bank. [www.oecd.org/dac](http://www.oecd.org/dac).



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ISBN 0-945356-53-6

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# WATER AND CONFLICT

INCORPORATING PEACEBUILDING INTO WATER DEVELOPMENT