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WATER AND VIOLENT CONFLICT¹

Water-related tensions can emerge on various geographical scales. The international community can help address factors that determine whether these tensions will lead to violent conflict. Water can also be the focus of measures to improve trust and co-operation

This [issues brief](#) aims to provide an introductory understanding of the relationship between water and violent conflict. It outlines lessons learned and recommendations for programmes seeking to prevent and mitigate water-related conflicts.

Building on the [Overview of the Links Between the Environment, Conflict and Peace](#) issues brief, it complements other environment-related issues briefs on [land](#), [forests](#) and [water](#). Underlined words are hyperlinks to other topics available at www.oecd.org/dac/conflict/issuesbriefs.

KEY MESSAGES:

- Water is indispensable to human survival, livelihoods and most forms of economic production.
- Access to water and water allocation and use can become the focus of tensions, which may potentially spill over into conflict, within or between states. Direct violent conflicts over water are most likely on a local level, for example, over the privatisation of drinking water or access to a water point.
- On the international level, tensions between countries that share a river basin may hinder sustainable development – thus indirectly driving poverty, migration and social instability. They also have the potential to exacerbate other non-water-related violent conflicts.
- A mutual need to share water may be used to help forge peaceful co-operation between societal groups.
- Support for stakeholder dialogue and improved customary and formal governance can assist confidence building among societal groups over water resources (e.g. helping to allocate rights, resolve disputes and ensure equitable compensation). Sustainable water governance hinges on long-term, demand-side management.
- Between states, the development of shared data, information systems, water management institutions, and legal frameworks helps to sustain efforts to reduce the risk of conflict.

¹ The drafting of this issues brief was led by the United States Agency for International Development.

Access to water, and its allocation and use, are critical concerns that can drive conflict.

Political, socio-economic, and cultural factors determine whether these tensions lead to violence.

Local violence over water can spill over into wider-scale conflict

INTRODUCTION

Water – essential for human survival – is also necessary for nearly every sector of human activity, including agriculture, industrial production and power generation, and as a key means for transporting people and goods. It is estimated that 10% of world water withdrawal is used for domestic uses, 20% for industrial uses, and 70% for irrigated agriculture. In addition, water often has a substantial emotional and symbolic value, and is also needed for keeping natural ecosystems intact. As pressure on fresh water supplies rises due to population growth, economic development and pollution, access to water, and its allocation and use, are becoming increasingly critical concerns that may have profound consequences on societal stability.

KEY ISSUES

While water has not been a major cause of violent conflicts historically, water-related tensions can emerge between and within states.² They occur on four interdependent levels:

- The local level: e.g. between societal groups over access to a water point; or between the state and people affected by the construction of a dam.
- The national level: e.g. between different interest groups (farmers, industry, tourism, environmentalists) in relation to national policies affecting water management, for example over the reallocation of water between economic sectors.
- The international level: e.g. between upstream and downstream states over the use of shared rivers.
- The global level: e.g. between food exporters and food importers in relation to the world food market.

These levels are linked – any intervention affecting one level needs to assess the potential impacts on the other levels.³ Political, socio-economic and cultural factors on these different levels determine whether these tensions lead to conflict.

Where they have occurred, water-related conflicts have tended to be internal – between local groups, and not between states (Postel and Wolf 2001). However, competing cross-border water needs have led to persistent tensions and have hampered development (Wolf 1999).

Within states, at the local level, competition over water use, its availability and allocation can lead to low-scale violence, which can escalate into instability within states and across sub-regions. Tensions between citizens and authorities over water issues may initially manifest themselves in the form of civil disobedience. They may, however, also escalate into acts of sabotage and violent protest if adequate political participation is not possible.

Tensions over water in an international river basin often mean that a shared resource is not developed. They result in, and are

² Conflicts are an unavoidable part of processes of social change in all societies. This issues brief deals with violent conflict but, from here on, uses "conflict" as shorthand for it.

³ There are both physical links (water, food) and non-physical links (political processes, economic flows) between these levels. See: Mason S., Hagmann T., Bichsel C., Ludi E., Arsano Y., (March 2007, forthcoming), "Linkages between sub-national and international water conflicts: the Eastern Nile Basin". In: Brauch H.G., Grin J. et al. (Eds), Facing Global Environmental Change: Environmental, Human, Energy, Food, Health and Water Security Concepts, Berlin, Springer-Verlag.

...the complex inter-relationships between water and other factors need to be taken into account.

In terms of water quantity, distribution is uneven and a distinction must be made between physical scarcity and "economic" scarcity

...both can affect different social groups in different ways.

exacerbated by, a lack of "structural stability" (where capable, accountable and responsive structures exist to peacefully manage and mitigate conflict and ensure respect for institutions and the [rule of law](#)). International river basin commissions can serve to build trust and confidence and coordinate development.

Water-related tensions can occur when water is scarce, but even when the resource is not severely limited, its allocation and use can still be hotly contested. The coexistence of a variety of uses and users – such as agriculture, industry, different clans or ethnic groups, and rural and urban users – increases the likelihood of conflicting interests over water. These can drive or exacerbate existing threats of conflict on intra- and inter-state levels. In addressing the governance and management of water, the complex inter-relationships among other factors affecting the dynamics of conflict and peace must, therefore, be taken into account.⁴

Water availability

Water quantity

Water quantity is generally related to food production – responsible for 70% of global water withdrawal. One kg of bread requires about 1,000 litres of water to produce, and 1 kg of beef about 15,000 litres. While on the global level there is enough water to feed a growing population, regionally and in terms of *when* it is available, water is distributed very unevenly. One should differentiate between countries experiencing *physical* water-scarcity (e.g. North Africa and Middle East) and those affected by *economic* water-scarcity⁵ (e.g. Sub-Saharan Africa). The first group do not have enough primary available water to produce enough food for themselves. One main reason why physical water scarcity does not lead to water wars, however, is because these countries import food, i.e. "virtual water" (= water embedded in food, Allan 1997) thus easing the pressure on their own water resources. Countries experiencing economic water scarcity, however, have enough primary, naturally available water, but they lack the infrastructure and institutions to make use of it.

Millions of the world's poor, particularly in rural areas in subsistence agricultures, depend on water for their livelihoods. If no adequate economic and political measures are taken, water will contribute to instability in water-scarce regions as demand approaches the limits of supply (Ashton 2000). Water scarcity, in combination with low economic development and shortfalls in political governance and other mechanisms in managing tensions peacefully, may therefore lead to instability – threatening lives and livelihoods.

As water scarcity can affect different social groups in different ways, tensions may arise among them. The risk is particularly high where there is discrimination over access to water. Water may at times even be used as a "weapon" or tool for oppression against a marginalized group. Violence can result where there is weak institutional and social capacity (see below) to mitigate problems.

4 Example agency guidance on conflict analysis is provided on the DAC's CPDC at www.oecd.org/dac/conflict/analysis. The DAC Network on Governance is looking at political economy analysis to identify good practice in using the different approaches such as drivers of change analysis (go to www.oecd.org/dac/governance). See also www.conflictsensitivity.org

5 Countries suffering from "economic water scarcity" have sufficient water resources to meet their additional primary water supply, but need additional storage and conveyance facilities to make use of the naturally available water. Most of these countries face severe financial and development capacity problems (International Water Management Institute - <http://www.iwmi.cgiar.org/>).

Profound change processes or events can have significant implications

Suffering arising from water quality is closely linked to economic capacity, institutions and infrastructure.

The way in which water is governed and administered may be a key determinant of its impact on conflict dynamics

Sudden droughts and floods, climate change, infrastructure construction, or pollution disasters, have profound negative effects on water availability. The threats to livelihoods, which may force migration across community or national boundaries, or into rapidly growing cities, can lead to tensions between local and incoming groups.

Water quality

Water quality is mainly related to drinking water, hygiene, sanitation and human health. About four million people die every year worldwide in relation to these problems. This is often due to a lack of, or shortfalls in, economic capacity, institutions and infrastructure, and is not a question of the naturally available water in the region.

Water quality and quantity are, however, closely linked. Decreasing water quantity concentrates pollution, and water quality degradation aggravates scarcity. With the potential to cause serious threats to human and environmental health, water degradation can cause dispute between those who cause it and the affected groups. Unsustainable agricultural practices, for example, often lead to erosion and excessive nutrients or suspended solids in the water. This can have highly negative consequences on water availability for other downstream users.

Providing water as a service⁶

Disputes over access to potable water can also affect internal relations between citizens and their government. Issues include infrastructure connections for urban or rural areas, service accountability, and pricing. In most countries, the state is responsible for supplying water, even when private firms hold water supply concessions. Water management disputes arising between communities, service providers (from the state or the private sector), and national and/or local authorities may potentially spill over into violence.

The UN has declared access to water for basic human needs (drinking water, hygiene and food preparation) as a fundamental [human right](#).⁷ Thus the state needs to make sure it is free, or provided at a cost that is affordable to the poor. Water for luxury goods, i.e. for swimming pools or for washing cars, can, however, be viewed as a private economic good, and allocated according to market principles.

Water governance

Often it is not the actual lack of water that may lead to tensions but rather the way in which water is governed and administered. Whether water is scarce or not, the highly complex and sensitive nature of its availability, use, and allocation requires strong, capable mechanisms and institutions to negotiate and balance competing interests and to manage this vital resource. The existence of such mechanisms and [institutions](#) is a critical factor influencing intra-state and cross-border relations over water at least as important as traditionally cited variables such as climate, physical water availability, population density, and levels of economic development.

⁶ The DAC Fragile States Group is conducting work in 2005–2006 on service delivery as it relates to water supplies (go to www.oecd.org/dac/fragilestates)

⁷ See Backgrounder for International Year of Freshwater:

...while demand-side management is crucial in the long term.

Co-operation between stakeholders should be supported

and the roles of institutions need to be clear...

Water management failures may, for example, result from an absence of adequate mechanisms for dialogue, a lack of capable institutional structures, shortfalls in administrative capacity, a lack of transparency and/or ambiguous and overlapping functions.

In the long term, the only sustainable form of water management is demand-side management (making better use per drop of water, e.g. reuse, more efficient technology, institutions to safeguard sustainability). Supply-side management — increasing the water that can be withdrawn, e.g. through dams⁸ — is needed in regions where the water infrastructure is still underdeveloped (e.g. Sub-Saharan Africa). A key water governance principle, however, is to always consider possible demand-side management alternatives to supply-side infrastructure projects.

Stakeholder dialogue and participation

Broad and participatory [dialogue](#), facilitated by effective [civil society](#) groups, helps to mitigate tensions arising from the way that the resource is used and allocated. It should be noted, however, that if the power asymmetry between the dialogue participants is too large, consensus oriented dialogue is difficult. Experience has shown that one incentive for dialogue is if donors make co-operation between stakeholders a prerequisite for the funding of a water development project⁹. The participation of women must be assured, as they are critically important in dispute resolution and dialogue processes.¹⁰

Management decisions formulated without sufficient stakeholder participation often fail to take locally recognized rights and practices into account and, as a result, may lead to instability. This risk is particularly acute where water allocations are suspected to result in a diversion of public resources for private gain, or when water use rights are assigned in an untransparent and possibly corrupt manner.

State institutions

Within states, a lack of clear responsibilities between institutions may lead to failures in effectively and peacefully managing competing claims and practices. For example, decisions made by various institutions (e.g. agriculture, fisheries, water supply, regional development, tourism, transportation, conservation and environment) often produce divergent management approaches that serve different objectives. There may also be tensions or contradictions between formal and customary mechanisms.

Managing shared water systems

Given that water flow ignores political and community boundaries, decisions in one place affect water use elsewhere. In the case of shared river basins, water use upstream can affect downstream quality and quantity, thus creating the potential for conflicts of interest. Complex physical, political, and human interactions can make the management of shared water systems especially difficult.

⁸ These types of projects should be accompanied by a strategic environmental and social assessment as well an assessment of the project's impact on the dynamics of conflict and peace.

⁹ See for example the World Bank Operational Policy 7.50: "The Bank recognizes that the cooperation and goodwill of riparians is essential for the efficient use and protection of the waterway....In cases where differences remain unresolved between the state proposing the project (beneficiary state) and the other riparians, prior to financing the project the Bank normally urges the beneficiary state to offer to negotiate in good faith with the other riparians to reach appropriate agreements or arrangements."

¹⁰ See tip sheets on land, agriculture and the environment, and on water supply and sanitation, produced by the DAC Network on Gender Equality (www.oecd.org/dac/gender).

ISSUES BRIEF

Improved governance can be motivated by mutual concern over water supplies,

...and trust can be built by better data sharing, for example.

Risks of conflict linked to water need to be assessed.

However, mutual concern over water supplies may also prompt users from different communities and states to co-operate in the sharing of this essential resource. Since 1948, approximately 295 international water agreements have been negotiated and signed dealing with issues such as water quantity, quality, economic development and hydroelectric power. Relations among riparian states are generally more cooperative in those cases where international water institutions exist, which act to accommodate changing political, hydrological or other basin conditions, than in basins without treaties or water management mechanisms.

Sharing data

Although reliable information is often difficult to obtain, a database containing meteorological, hydrological, and socioeconomic data remains key to effective longer-term water resource management, particularly across regions. Tensions between states can emerge when data is not shared appropriately or is misused to block development plans. Disparities among water users' capacities to generate, interpret and legitimize data can lead to mistrust, hindering co-operation. However, collaboration and trust can be built up by sharing data transparently and engaging in open discussion.

KEY QUESTIONS TO CONSIDER WHEN GETTING INVOLVED

There are a number of key questions that can help evaluate the risk of conflict linked to water. These questions should also assist development practitioners to effectively integrate water management and conflict prevention/mitigation into their programmes and projects.

Not all questions presented here will be relevant in all regions or in all cases.

- To what degree are water scarcity, use and quality and/or changes in water availability likely to affect societal relations and stability? What kind of importance (economic, cultural etc.) does it hold for its users, both men and women?
- Is flooding, lack of water, or water resource development depriving people of their livelihood or forcing them to migrate? Can dependency on water for livelihoods be reduced (e.g. by economic diversification or better water use)?
- How far is the infrastructure to withdraw water in the region already developed? Are there demand-side management alternatives to supply-side projects? (see the guidelines of the World Commission on Dams)
- 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?
- Are water management mechanisms (customary and formal) effective, enforced and perceived as fair? What is their capacity to determine rights fairly and impartially?

- Do two or more parties hold competing claims over a water resource, its allocation or use (e.g. for agriculture or transport)? Do they belong to different groups in society? Are the property rights (communal, private or state) clearly defined and enforceable? (see the issues brief on [Land](#)).
- Does an unequal power relationship exist between the competing groups? Do other non-water-related tensions exist between them?
- Is there a willingness on the part of the water-sharing parties to cooperatively manage the resource? By what mechanisms (customary and/or formal) are disputes about water resolved? How accessible and effective are they?

IMPLICATIONS FOR PROGRAMMING

To support [peace-building](#) efforts, international organisations, aid agencies, NGOs, and the private sector are tackling links between water and conflict. Initiatives addressing water availability, allocation and use range from direct intervention to engaging in policy dialogue. Many of these have achieved positive results, offering important lessons for future action.

Successful ways to help mitigate conflict and increase confidence, both within and among states, include:

- Ensuring broad participation in dialogue processes on resource governance and co-operative water management. In particular, if water is taken out of its natural system (i.e. through dams or diversions), the people affected by these changes need to be compensated for their loss and need to be involved in the decision-making process. These processes must integrate the voices and needs of women.
- Improving transparency and information flows to stakeholders.
- Strengthening formal and customary institutions and mechanisms to improve water management and peaceful dispute resolution over shared water. This will likely involve balancing customary and formal approaches, as well as developing equitable laws and policies, and ensuring their fair and effective implementation.
- Supporting those regional initiatives that hold potential to build co-operation and peace by focusing on water.
- Integrating conflict-impact and water-resource assessments .
- Focusing in the long term on demand-side water management (reuse, efficient use, inter-sector reallocation).
- Supporting countries suffering from economic water-scarcity to produce their own food, e.g. by a sustainable increase in yields.
- Supporting physically water-scarce countries to develop their economies so they have the means to import food. Regulating the world food trade so that water-scarce countries have secure and stable access to world food markets.

A range of initiatives can be supported

...from broader dialogue processes

...and better mechanisms for water management and dispute resolution

...to a vital focus on demand-side issues.

WORKING TOGETHER

International actors can help ensure broad participation in dialogue processes on resource governance and management

- The Every River Has Its People Project, implemented by NGOs in Namibia and Botswana, promotes sustainable co-management of the Okavango River basin by facilitating stakeholder participation in planning, management, and decision-making. The Swedish International Development Agency (SIDA) is a key donor to this project.
- Revival of Boran institutions in the Ewaso river basin was supported through meetings organised between community elders, government officials, women's group leaders and NGOs to help mediate conflicts over the use of water from the Ewaso Ng'iro floodplains in north-central Kenya. A goal of the project was to restore and strengthen the Chaffa, which is the institution that traditionally supervised the use of critical floodplain areas and distributed water during dry spells. Friends of Nomads International (FONI) is the key donor to this initiative.

International actors can help strengthen institutions in order to improve water management and co-ordinate water use.

- "Integrated Water Resources Management in Ferghana Valley (IWRMFV)" fosters new institutional and technical structures to enable disparate interests to peacefully coordinate actions on water use. The main goal of the project is to improve rural population livelihoods by demonstrating integrated water resource management in the Ferghana Valley. This is also relevant in terms of on-going agricultural reforms in other states within the region. Major partners for this project include the Swiss Agency for Development and Cooperation, International Water Management Institute, and the Scientific Information Center of the Interstate Commission on Water Coordination.

International actors can support the adoption of measures to peacefully manage disputes and increase confidence.

- The Kaltok Conflict Prevention and Resolution Project helped meet the needs of communities in Northern Sudan through improved access to clean water, and assistance in managing conflict. Training was provided for management committees formed by the communities, and to water-pump operators. In addition, community meetings were organised during which stories about conflict, its causes, and local strategies for dealing with it were collected. Conflict analysis workshops that included community leaders and government field staff were also held. Oxfam is a key donor to this project.

International actors can promote the generation and sharing of data and information.

- The Water Data Banks Project consists of a series of specific actions to be taken by the Israelis, Jordanians, and Palestinians. These actions are designed to foster the adoption of common, standardized data collection and storage techniques among the parties, improve the quality of the water resources data collected

in the region, and improve communication among scientific communities in the region. Major donors to this project include Canada, the European Union, France, the Netherlands and the United States.

International actors can provide support to regional initiatives that hold the potential to build co-operation and peace by focusing on water.

- The Mekong River Commission is well placed to promote the equitable and sustainable use of water in the Mekong Basin. The riparian states include Thailand, Vietnam, Laos, Cambodia and China. Potential for differences and conflicting interests are high, and the Commission has been fairly effective in dealing with them peacefully, although it needs support to improve its capacity.

International actors can help integrate conflict impact assessments and water resource assessments.

- An indicator framework was developed for macro-micro analysis focusing on resource-based conflict in Ethiopia's Awash Valley. The goal was to develop conflict indicator tools that place resource-based conflicts within socioeconomic, political, and cultural parameters. The indicator-based analytical framework defines overall objectives, prioritizes focal areas and identifies risks of engagement. Saferworld is the key donor.

FURTHER INFORMATION

Websites and reference documents can be found through www.oecd.org/dac/conflict/themes.

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