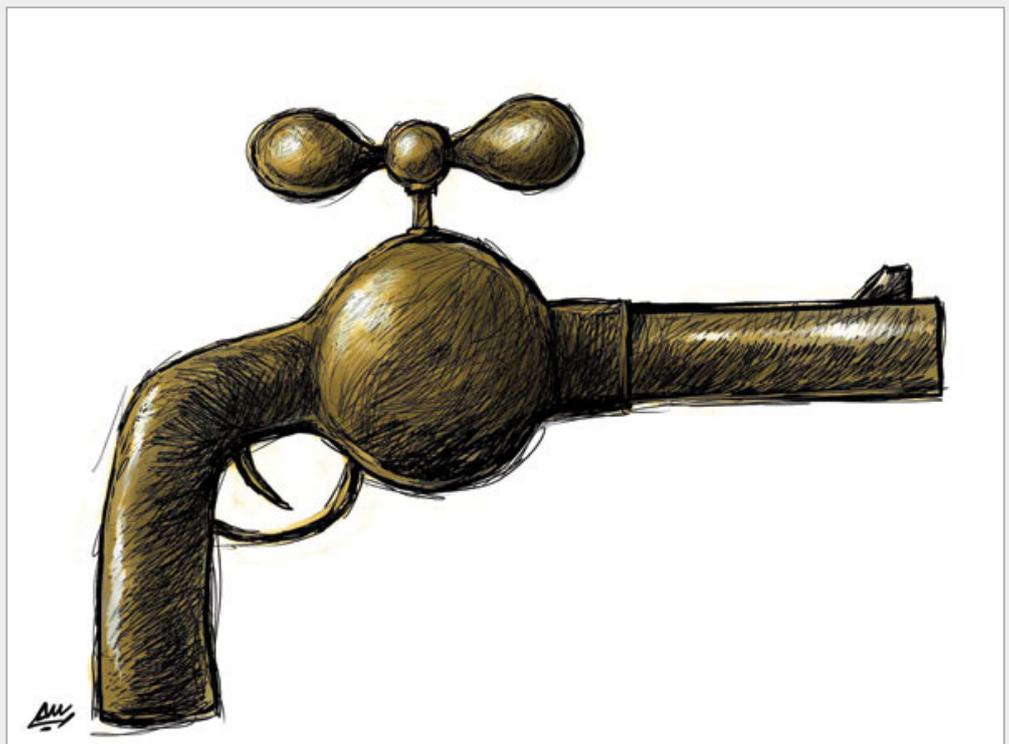


CSS MEDIATION RESOURCES

Mediating Water Use Conflicts in Peace Processes

Simon J. A. Mason and Dorothea Blank



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Acknowledgements: Thank you to Jon Martin Trondalen, Julian T. Hottinger, Undala Alam and Adrian Muller for the very helpful comments on an earlier version of this text. Thank you also to Lorraine Traynor and Owen Frazer for proofreading. The financial support of the Swiss Federal Department of Foreign Affairs, through the Mediation Support Project (a joint initiative of the Center for Security Studies & Swisspeace) is gratefully acknowledged.

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Foreword

Water is a limited, non-substitutable resource and essential for survival. Water is at the core of sustainable development and is a fundamental enabler and primary resource for social well-being, economic development and environmental security. National, regional and international stability and peace increasingly depend on effective and sustainable management of the world's freshwater resources. At the same time, the water sector is faced with major global changes on a scale never experienced before: climate change, population growth, migration, urbanization, changes in land-use and in the economic sector, to name but a few. These changes all impact directly on water resources, the provision of water services and the availability of ecosystems services.

Although freshwater is a renewable resource, the total amount of freshwater resources available worldwide is constant and the demand for freshwater is dramatically increasing. While the world's population has tripled, the water demand has multiplied six fold during the last century. By 2030 global demand for freshwater is expected to increase by 30 percent and the population will top 8.3 billion. Climate change will only augment the burden. Water demand already exceeds supply in many parts of the world today. Several models estimate that half of the world's population will be living in areas of high water stress by 2030. This water stress can add to the instability inside and between the countries of a region by obstructing economic development and exacerbating larger conflicts.

While competition over access to water can be a source of conflict, the joint management of water resources can also be used to foster trust between stakeholders that can grow beyond water issues. Water management negotiation platforms can thus encourage the search for equitable and sustainable solutions, considering not only how water resources are used but also how the benefits of water-related infrastructure can be shared between parties or countries.

For such negotiations to be successful and contribute to trust-building, strong capacities in mediation are required. This publication is a very relevant contribution in this sense, providing well-articulated tools and approaches for addressing potential, or already existing, tensions or conflicts over water use at the local, national or transboundary levels. It is in line with Switzerland's efforts to improve water security in a way that also promotes peace, human rights, economic growth and environment protection aspects.

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1. In a Nutshell

The aim of this document is to help mediators working on peace processes to address water issues. We argue that the mediation of water conflicts differs somewhat from the mediation of other conflicts, and peace mediators should be aware of this if they are to deal adequately with water-related issues in complex political peace processes. This guidance note primarily addresses peace mediators who are not familiar with water conflicts. Experts and mediators with prior knowledge and experience of the topic are invited to skip the first two sections.

1.1 Key messages

Use the complexity of water conflicts to open avenues for resolution: Water conflicts can be understood as a struggle between two or more actors over access, control, management and use of water resources. Water conflicts often arise because the negative implications of the actions of one water user on other water users are ignored. Water conflicts involve multiple actors, issues, geographical levels and time-frames. The multi-functionality and symbolic aspects of water means that conflicts over water are nearly always also linked to other socio-cultural, economic, and political issues. This creates complexity, but it also opens avenues for resolution, as a specific demand for water can be satisfied in different ways.

Consider links between local, national, regional and global level: Water conflicts occurring on one level (local, national, regional, global) are influenced by and affect other levels. International agreements for water infrastructure projects, for example, may solve international tensions but cause local conflicts. Peace agreements mainly deal with questions related to water governance at the central state level. These decisions have impacts on local level conflicts, often in areas where people cannot protect themselves from the potentially negative consequences of company or governmental decisions.

Mediate procedures and mechanisms to deal with water conflicts: Water conflicts are often decentralized, re-occurring and changing – which is why there are limitations to the extent to which they can be managed at the central state level. Track 1 mediation processes involving the central state elites may create a framework within which the issues can be addressed, but they nevertheless generally focus on creating adaptive mechanisms and procedures for dealing with these conflicts, rather than solving water

conflicts once and for all. For the same reasons, track 1 processes need to be linked to track 2 (mid-level, non-official but influential actors) and track 3 (grass-roots actors) dialogue, problem-solving and negotiation/mediation processes. Some useful tools and approaches used and combined by mediators to address water conflicts include:

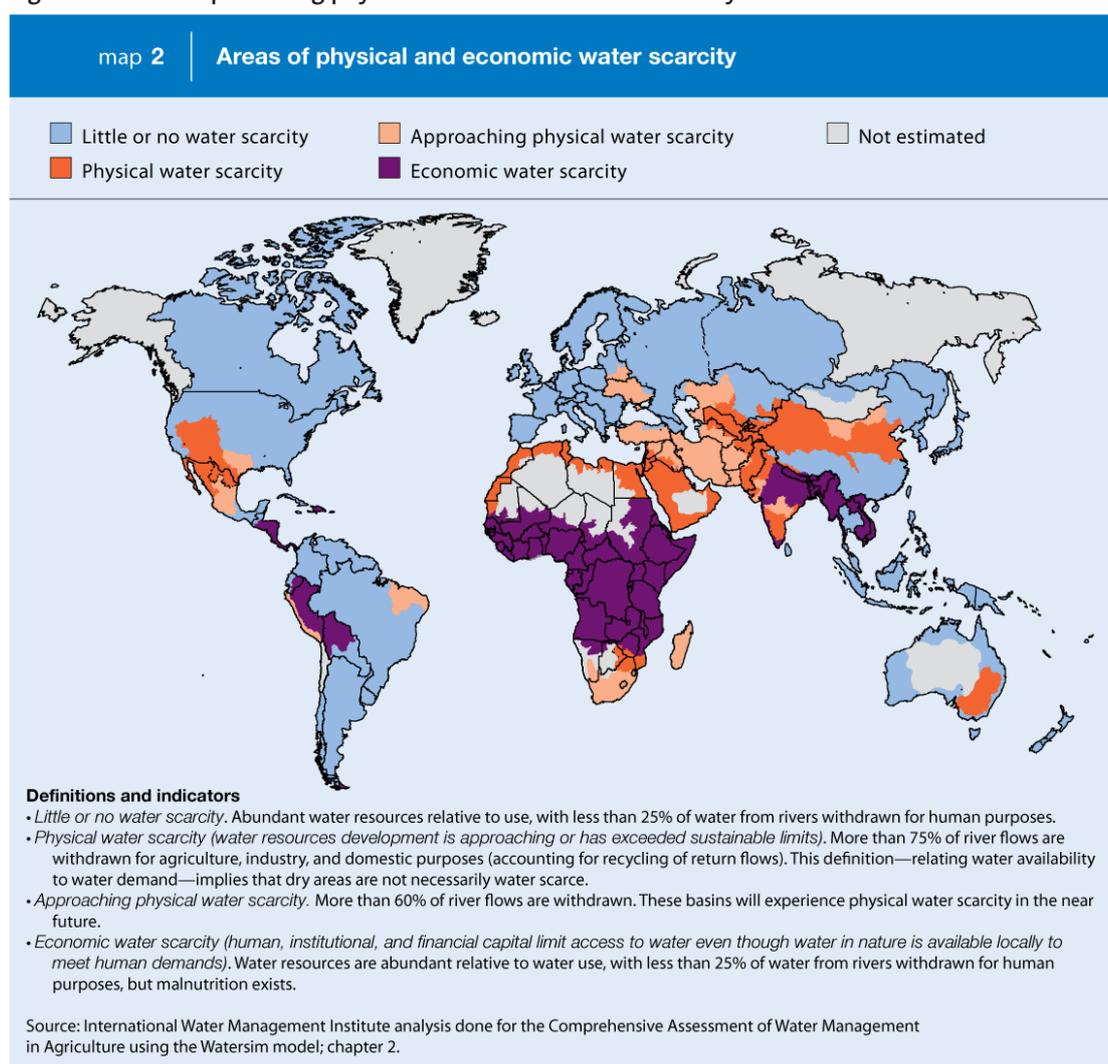
1. **Joint capacity building:** Joint capacity-building activities involving all actors in the negotiation process can help to create trust and a relatively equal knowledge base for negotiating water-related issues.
2. **Joint fact finding:** Focusing on mediating procedures for joint fact finding can help to develop mutually acceptable processes for obtaining, analysing, and interpreting data. Without sufficient acceptable data, water conflicts cannot be adequately negotiated.
3. **Modelling and scenario building:** Participatory modelling and scenario building can be useful in order to test options before agreeing on them.
4. **Mediating use, not ownership:** Mediating the access, management and use of water, and sharing the costs and benefits of the uses for the resource, rather than the ownership of water, can lead to mutually acceptable agreements. This often involves unpacking and re-packaging different forms of user rights so that the new “package” better fits the parties’ interests and needs.
5. **Combine political and technical processes:** Political negotiations often use technical committees to gather data, develop options, and assess the impact of various options. The political and technical processes can be combined in numerous ways, ideally in such a way that they enhance the effect each has in developing trust, common understanding and political will amongst the parties.

2. Water Conflicts

Water resources are increasingly becoming a source of tension around the world, due to climate change, physical water scarcity, economic water scarcity, unsustainable economic management and development practices¹, the global food trade², and ecological damage from human behavior (mining, industry, etc.). Water-related conflicts can be understood as a struggle over access, control, management and use of water resources. They often involve tensions over the right to use and exclude others from the resource, over resource depletion, and over the corresponding threat to

livelihoods. Physical water scarcity³ exists in countries where the per capita freshwater availability is limited (e.g. North Africa, Middle East). In such contexts it is not drinking water scarcity but scarcity of water for irrigation that is the primary problem. Economic water scarcity⁴ exists in countries where water is abundant but the capacity to use the water is severely constrained by institutional and infrastructure limitations (e.g. some countries of Sub-Saharan Africa). In this case, water for all types of use may be constrained. Water scarcity per se does not lead to water conflicts. The key question is whether mechanisms exist to regulate competing demands on water use.

Figure 1: World map showing physical and economic water scarcity



Source fig. 1: IWMI 2007, GRID-Arendal, http://www.grida.no/graphicslib/detail/areas-of-physical-and-economic-water-scarcity_1570

1 Luzi, S., (2007), "International River Basins: Management and Conflict Perspectives", *CSS Environment and Conflict Transformation*, Zurich: Center for Security Studies ETH Zurich.

2 H. Yang, H. et al. (2006), "Virtual water trade: an assessment of water use efficiency in the international food trade" in *Hydrology and Earth System Sciences*, 10, pp. 443–454.

3 Defined as less than 1700 m³ of naturally available freshwater per person per year, or annual withdrawals of 20–40% of the available supply. See: White, C., (2012), "Understanding Water Scarcity: Definitions and Measurements", *Water Security*, 7 May 2012. http://www.iwmi.cgiar.org/news_room/pdf/Understanding_water_scarcity.pdf

4 Understood as limited economic resources and insufficient infrastructure and institutional capacity to make use of naturally available water resources. See: White, C., (2012), "Understanding Water Scarcity: Definitions and Measurements", *Water Security*, 7 May 2012. http://www.iwmi.cgiar.org/news_room/pdf/Understanding_water_scarcity.pdf

Consumptive and non-consumptive use: Consumptive use of water refers to processes where water is “used up”. If water is consumed, e.g. taken out of the system in the form of food, or water is lost to evaporation, then it cannot be used again. Non-consumptive use refers to processes which use water without permanently removing it from the system. For example, water can be used for energy production, but the water then flows back into the river. Consumptive water use is more difficult to mediate than non-consumptive water use. Solutions to minimize the consumptive use of water may be technical (e.g. drip irrigation), or institutional (i.e. efficient allocation of water to users), or may focus on demand side management (e.g. reducing water use). The consumptive use of a water resource must also be looked at in the context of the rate at which it is naturally replenished. Water resources become non-renewable if they are consumed at a rate faster than they are replenished.

Economic and non-economic uses of water: The multi-functional nature of water resources must always be kept in mind. Water is needed for industry, agriculture, and direct human consumption. 70% of all water withdrawal worldwide is for agricultural purposes, 20% is for industry and 10% for domestic use (consumption and hygiene)⁵. Water is also connected to land rights, borders, fishing rights, shipping, transportation, electricity generation, flood control, and other issues. Conflicts over land and territory often include the question of access and control over water (e.g. Israel-Palestine).

Dealing with water within a peace process also requires an understanding of the non-economic role that water plays, since water can also be politically, culturally and symbolically significant. There are, for example, many myths and poems about the origins and healing powers of the Nile waters, as well as about the way in which the Nile water contributes to cultural identity.⁶ Water’s multi-functional nature requires that any technical agreement be formulated in such a way as to ensure that the political and cultural implications of the solutions are considered by the parties.

Common pool resource: Water resources are generally common pool resources, where it is difficult to exclude other actors from the resource, whether through physical or legal means. At the same time,

the benefits that one actor may enjoy from the resource may reduce the benefits available to others.⁷ Since common pool resources such as water can be depleted, their use and management requires restrictions on the number of users to prevent overexploitation and degeneration of the resource.⁸ Conflicts may emerge between the users of water resources over who has the right to use the resource and to exclude others from it. For example, upstream water users may use water for irrigation, reducing the amount available for downstream users, or different user groups may fight over access to a source of drinking water.

Water conflicts on different geographical levels: Water-related conflicts occur at a local, national⁹, regional (between neighboring countries), and global level. Conflicts occurring on one level can spread to other levels.¹⁰

- At the **local level**, conflict may arise over competition between groups of water users with the same need (e.g. different pastoralist groups over a water well), or between users with different needs (e.g. pastoralists vs. sedentary farmers in the Sahel, or urban vs. rural). Water conflicts may also arise within one economic sector (e.g. agriculture), or between different economic sectors (e.g. agriculture and industry). Sometimes there is competition between conservation efforts and economic development initiatives, for example when a mining project leads to water pollution which destroys plant and animal life. At this level conflicts may also arise from competing property rights claims. Conflicts on this level are more likely to take place in economically water-scarce countries because of the lack of infrastructure and institutional management necessary to distribute water to users effectively and equitably. Local level conflicts may become violent, as illustrated by clashes between the two villages of Porto and Haria on the island of Saparua, Indonesia, regarding who controls the source of water for the villages.¹¹

5 UN Water, Statistics and Maps http://www.unwater.org/statistics_use.html

6 Arsano, Y., (2007), *Ethiopia and the Nile: Dilemmas of National and Regional Hydropolitics*, Zurich: Center for Security Studies ETH Zurich, pp. 69–74.

7 Ostrom, E., C. Hess, (2007), “Private and Common Property Rights”, presented at the 2007 Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington, Indiana, pp. 8–9.

8 Ostrom, E., et al., (1999), “Revisiting the Commons: Local Lessons, Global Challenges”, *Science*, 284(5412), 9 April 1999, p. 279.

9 Shankleman, J., (2006), *Oil, Profits, and Peace: Does Business Have a Role in Peacemaking?*, Washington D.C.: USIP Press.

10 Mason, S.A., et al., (2009), “Linkages between Sub-national and International Water Conflicts: The Eastern Nile Basin”, *Hexagon Series on Human and Environmental Security and Peace*, Vol. 4, (April 2009), p. 328.

11 International Crisis Group, (2011), “Indonesia: Trouble Again in Ambon”, *Asia Briefing*, No. 128, Jakarta/Brussels, 4 October 2011. <http://www.crisisgroup.org/-/media/Files/asia/south-east-asia/indonesia/B128%20Indonesia%20-%20Trouble%20again%20in%20Ambon.pdf>

- At the **national level**, water-related conflicts are usually the result of conflicting policies regarding water rights, infrastructure/economic development, and center-periphery relations. Different political elites may compete over policies, constituencies and the distribution of wealth. National development policies can have unintended or unforeseen effects for local communities that create conflict. State-driven decisions as to where and how large hydropower or irrigation projects are built, for example, have been controversial issues in Egypt, Ethiopia, China, Sudan and Turkey. The development of Merowe dam in Sudan led to the displacement of some 50,000 to 70,000 people. This went hand in hand with protests - in one such protest in 2006, three people were killed and 40 were injured.¹² In economically water-scarce countries, national-level water conflict is usually a consequence of insufficient infrastructure or poor water management. In physically water-scarce countries, national level conflict can emerge over policy shifts that re-appropriate local water resources for national purposes (e.g. domestic water use vs. irrigation in the Nile Delta in Egypt). River diversions, irrigation projects or industrial pollution may also change the level or quantity of groundwater, affecting local water users' access to groundwater. Civil wars may also lead to the severe degradation of water resources or the destruction of infrastructure needed to exploit the resource. In 2012, the pipeline bringing drinking water to Aleppo, Syria, was severely damaged.¹³
- At the **regional level**, water-related conflicts arise over shared river basins (e.g. Mekong, Nile, Jordan, Euphrates-Tigris, Indus) or transboundary groundwater (e.g. North Saharan Aquifer System (SASS) shared between Algeria, Tunisia, and Libya). At the core of the disputes are very often issues of allocation (e.g. between Ethiopia upstream and Egypt downstream), but also to a great extent issues regarding the quality of the water downstream, especially in arid zones (in the Middle East primarily due to salinization). For instance, a downstream actor might argue that an upstream actor is not allowing sufficient quantities or quality of water from a shared transboundary river to flow across the border. At this level, water in some instances is intertwined with highly politicized issues. Tensions between Israel and Palestine involve far more

than just water, but addressing water issues is one necessary dimension for peace in the region.

- **At a more abstract level, globally**, there is a link between the global food trade and world availability of water through “virtual water.” Virtual water is the water used during the production of food. As it takes about 1000 litres to produce a kilogram of bread, and ca. 5000–10'000 litres to produce a kilogram of meat, it is easier to transport food than it is to transport the water that is needed to produce it.¹⁴ Water is intrinsically tied to food security, and physically water-scarce countries are more likely to be dependent on food imports. This dependence makes them vulnerable to the fluctuations of the global food market. Physically water-scarce countries are found in northern Africa, the Middle East, as well as parts of Central and Eastern Asia. Land grabbing – large trans-national land transactions – for food and fuel is also contributing to an internationalizing of water use control and potentially threatening local food security.¹⁵ When mediating water conflicts between or within states, it is essential not to examine only the physical water resources in the area, but to also consider the role of virtual water, and how water may be imported and exported in the form of food.

Climate change: Affecting all the levels mentioned above, climate change is likely to make rainfall more erratic as well as reducing the total annual amount of rainfall in certain areas. If these changes happen faster than management systems are able to develop in response to them, water insecurity and conflict may result. Decreased agricultural productivity, greater reliance on irrigation, along with decreased freshwater availability for growing populations are all likely effects.¹⁶ Countries with low adaptive capacities and higher levels of water scarcity will be especially affected. This means that both economically and physically water-scarce countries will be particularly affected by climate change and changing water availability. It is estimated that by 2025 almost two-thirds of countries will be water stressed, while 2.4 billion people will be facing absolute water scarcity¹⁷. While the Darfur conflict is mainly a centre-periphery conflict related to

12 “Sudanese Police Arrest Four Students from Merowe Dam Affected Communities”, *Sudan Tribune*, 16 November 2011. <http://www.sudantribune.com/spip.php?article40754>

13 Pacific Institute, *Water Conflict Chronology List*: <http://www.worldwater.org/conflict/list/>

14 Renault, D., (2002), *Value of Virtual Water in Food: Principles and Virtues*, presented at the UNESCO-IHE Workshop on Virtual Water Trade, 12–13 December 2002, Delft, the Netherlands: <http://www.fao.org/nr/water/docs/virtualWater.pdf>

15 Borras, S., et al., (2011), “Towards a Better Understanding of Global Land Grabbing: An Editorial Introduction”, *The Journal of Peasant Studies*, 38:2, pp. 209–216.

16 Gleick, P.H., “Water and Conflict: Fresh Water Resources and International Security”, *International Security*, 18:1 (Summer 1993), 96.

17 World Bank, *Issue Brief: At a Glance: Water* <http://water.worldbank.org/node/84122>

Sudan's economic, cultural and political developments, climate change and the increasing drought in the Sahel zone seem to also have been factors aggravating the tensions in the area.¹⁸

3. Water Management

Many violent water conflicts could be avoided through better water resource management. In this section we will explore some of the relevant aspects of water resource management before going on in the next section to examine some of the specificities of how to mediate water issues.

Property rights: There are three main types of property rights relevant to dealing with water: public, private and communal property rights. In cases where there are no enforced property rights, the resource in question is public property. Private property rights allow individuals to use the resource as they see fit and exclude others from it. Water resources are communal property when the right to use them is held by a defined group and this group can exclude non-group members from using the resource. These three main types of property rights become more complex when different types of rights are further differentiated, e.g. user, change, benefit and sell rights.¹⁹ Unpacking the bundle of water rights and then re-packaging them is one useful approach in mediation. For example, a conflict between an upstream and a downstream water user over exclusive ownership rights to the river water could be resolved by agreeing on needs-based user rights. This could involve different users having different times when they can take water out of the river system according to their respective needs.

Customary and modern property rights: Tensions over user rights occur between groups who have traditionally used the resource and new actors who move into the area. Traditional resource users often enjoy de facto property rights. De facto rights or customary property rights originate among resource users and are not recognized by governmental authorities. In

such cases the resource users “define and enforce rights among themselves” without their right to do so being legally institutionalized.²⁰ De jure rights or modern property rights on the other hand, are legally institutionalized and explicitly granted to resource users by the government. Even though resource users may have been using the river or groundwater source for generations, their rights are not legally protected and the introduction of new actors who base their right to use the resource and exclude others from it on modern property rights can lead to conflict. For instance, in the Woiyto Valley in Ethiopia in 1997 the customary rights of agro-pastoralist communities clashed with the modern property rights given to an agricultural enterprise by the government. The agro-pastoralists were pushed off their land and denied access to the river because the regional government recognized the modern property rights of the agricultural enterprise over the agro-pastoralist's claims which were based on historical use. In this case a dispute over water became violent and ultimately 17 people were killed.²¹ Such conflicts could be minimized by better considering how to combine customary and modern property rights.²²

Water pricing: Related to property rights, different economic pricing instruments have been explored to try and make water management more efficient. In cases where the equitable use of water has been neglected, however, this has led to conflict (e.g. drinking water conflicts in Bolivia). Concerns related to equitable distribution have led to an international movement against applying economic pricing instruments to water that is used to satisfy basic needs such as hygiene and drinking. However, for luxury water use beyond basic needs, e.g. for swimming pools, water pricing instruments are more accepted. Pricing instruments are also not culturally accepted everywhere. This may be for religious reasons, or may occur in secular societies that do not subscribe to market forces. In some cultures it is legitimate to use pricing instruments to achieve cost recovery of infrastructure that brings water to the user, but it is not seen as legitimate to actually put a price tag on water (for example, in Islam water is seen as a gift of God which cannot be sold).

¹⁸ Mason, S.A., A. Muller, et al., (2008), *Linking Environment and Conflict Prevention: The Role of the United Nations*, Zurich: Center for Security Studies ETH Zurich and Bern: swisspeace, pp. 29–32.

¹⁹ “User rights” refers to the right to use an asset, to consume a specific quantity of a resource in a given time, place and type of use. “Change right” is the right to change the time, type of use and place of resource. “Benefit right” is the right to gain income by temporarily transferring resource use rights. “Sell right” refers to the right to permanently transfer ownership rights over an asset. See: Shiferaw, M., (2009), *Risks and Conflict Management Options of Water Property Rights Reforms*, Bern: swisspeace.

²⁰ Schlager, E., Ostrom, E., (1992), “Property Rights Regimes and Natural Resources: A Conceptual Analysis”, *Land Economics*, 68(3), August 1992, p. 254.

²¹ Arsano, Y., “Conflict Management over Water Rights in Ethiopia: The Case of the Woiyto Valley in Southern Ethiopia”, in: Baechler G., K. Spillmann and M. Suliman M., (2002), *Transformation of Resource Conflict: Approach and Instruments*, Bern: Peter Lang.

²² Arsano, Y., (2007), *Ethiopia and the Nile: Dilemmas of National and Regional Hydropolitics*, Zurich: Center for Security Studies ETH Zurich.

Technical approaches: Besides institutional water management approaches, various technical approaches can be used. Some may focus on increasing the supply through constructing dams, wells and desalination plants. While desalination is one solution to limited drinking water it is still rather expensive (0.5–1 USD per 1000 litres) and thus not suitable for irrigation. Other approaches focus on increasing the efficient water use which usually implies decreasing the demand per constant output. Examples of this are drip irrigation rather than flood irrigation, or changing the type of crops used to water-efficient crops (“more crop per drop”). Furthermore, water-intensive agriculture can be replaced by other economic sectors, and food can be imported (“more money per drop”).

The key aim of this section has been to illustrate that there are many different tools and approaches for dealing with water conflicts.²³ These approaches may occur where there are no mediation efforts, they may occur in parallel to mediation efforts, or they may be an outcome of a mediation process. Only with this context in mind does it now make sense to focus more narrowly on how mediation – understood in simple terms as “assisted negotiations”²⁴ – can be used to deal with water conflicts.

4. Mediating Water Conflicts

In the following section, we first focus on general principles and approaches to keep in mind when mediating water conflicts. Many of the following characteristics of mediating water conflicts are similar to the mediation of other natural resource conflicts. The major difference is that water flows, so the spatial and time dimensions are different to those of other resources, e.g. static resources such as forests.²⁵ We then look at the mediation of water conflicts related to local communities. Finally we focus on the mediation of water conflicts in the context of national-level

peace negotiations involving governmental and oppositional elites. National-level peace mediation processes may lead to mechanisms that allow for mediation of local water conflicts, so it is important that mediators working in peace processes be aware of the types of mechanisms that may be applied at a local level. The mediation of international water conflicts is not the primary focus here, as it has been covered in other places.²⁶

4.1 General approaches to mediating water conflicts

Focus on interests; separate resource from costs and benefits: Throughout the entire mediation process, mediators will work on moving the negotiators towards an interest-based negotiation approach, instead of a positional or rights-based approach²⁷ (see figure 2). Unlike a rights-based approach, whereby users claim the right to the resource based on historical use, their legal entitlement or their geographical location, the interest-based approach examines the interest (i.e. motivations, objectives, concerns) and needs of all relevant stakeholders in order to find a solution that provides the most benefits to all parties. This makes it possible to delink the resource itself from the benefits that parties accrue from it, as well as from the costs of resource use that can be shared among them. The benefit of conceptualising the resource as a basket of benefits, as opposed to dealing with the resource as a single, indivisible entity, is that it allows the mediator and the parties to find creative ways to share the resource. This opens up space for creative problem solving and helps parties to find agreement.²⁸

23 For example: sustainable management practices, good water governance, participatory property rights development, integrated water resources development, water demand management, regulation of virtual water trade, trans-boundary water regimes, organic agriculture, climate change mitigation and adaptation, norms and standards for financial and resource management transparency, substitution, sufficiency, etc.

24 Mediation is understood as a structured process where an impartial third party, without decision-making authority, assists others in disputes to negotiate a mutually acceptable agreement. Adapted from: Moore, C., (2003), *The Mediation Process: Practical Strategies for Resolving Conflict*, San Francisco: Jossey-Bass Publishers.

25 Alam, U., (2002), “Questioning the Water Wars Rationale: A Case Study of the Indus Waters Treaty”, *The Geographical Journal*, 168(4), pp. 341–353.

26 Barrett, S., (1994), *Conflict and Cooperation in Managing International Water Resources*, Policy Research Working Paper, The World Bank, May 1994; Brochmann, M. and P. R. Hensel, (2009), “Peaceful Management of International River Claims”, *International Negotiation*, 14(2); Zawahri, N.A., and A. K. Gerlak, (2009), “Navigating International River Disputes to Avert Conflict”, *International Negotiation*, 14(2).

27 Fisher, R. et al. (1983), *Getting to Yes: Negotiating Agreement without Giving In*, New York: Penguin Books.

28 Wolf, A.T., (1999), “Criteria for Equitable Allocations: The Heart of International Water Conflict”, *Natural Resources Forum*, 23(1), (February 1999), p. 20.

Fig 2: Positions vs. Interest Analysis of the Sudan Jonglei Canal Conflict

In 1978, Egypt and Sudan started to build a canal through the swamps of southern Sudan, to minimize evaporation and increase the amount of water downstream for irrigation. Their *position* was: “We want to build the canal to increase the amount of available water”. In contrast, the Sudan People’s Liberation Movement/Army’s (SPLM/A) *position* was: “We do not want the canal, you are robbing the South of its resources and damaging the environment and people of southern Sudan.” At the level of positions the conflict was stuck, and the SPLA damaged the digging machine soon after the war with the North broke out in 1983.

The *interests* of northern Sudan (represented by The Government of Sudan) and Egypt were more water for irrigation as part of their food security strategy. Southern Sudan’s *interests* concerned the livelihood of the people in the region, transport routes, as well as sustainable development of the South. Although no agreement was reached, with these interests in minds, an adapted canal project could have been negotiated, or Egypt could have covered its food security interests through other means (demand side management, efficiency increase, import of food). Conflicts are stuck at the level of positions, but can be resolved at the level of interests.

Information management: Conflict over water resources is often complicated by conflicts over the legitimacy and accuracy of data and information. One approach that has proven successful is to mediate with the parties as to how information will be gathered, analysed, and used in the negotiation process; agreeing on a manner that is acceptable to all. This way it is no longer a question of who has more or better information, as the information is shared and can be jointly used. Negotiating the substance of the water conflict without a basis of acceptable and sufficient data is a recipe for failure. If data is insufficient or not accepted by all concerned parties, the negotiation often has to be put on hold until the parties have the information and the capacity to make sense of it (for more on how to deal with information, see below).²⁹

Modelling and scenario building: Modelling and scenario building are tools that can be used to help parties develop and think through options related to water management in a hypothetical manner, before then deciding on one that is put into reality. Modelling uses existing knowledge or collected data to create a formal tool that simulates the situation on the ground. It circumvents some uncertainty and does not force the parties to rely on trial and error when trying to come to an agreement. Scenario building is an interactive process that uses the data collected for the model and manipulates various parameters to assess the effects of different management strategies.³⁰ This tool makes it possible to find the “best” or most sustainable means of managing the resource while allowing the effects of different possible agreements to be tested during the negotiation process itself. Scenario building can help to minimize unforeseen issues and make agreements feasible. However, care has to be taken in how the parameters are set and changed.

Both tools create space for “out of the box” thinking and testing possible consequences, making it much easier for parties to let go of their original fixed ideas as to how the conflict should be resolved. Modelling and scenario building work best when they involve active participation of the various representatives of the affected constituencies. This ensures that relevant concerns are taken into account, making decision-making more legitimate. It also facilitates “social learning,” whereby actors learn with and from each other about how to manage the disputed issues and conflicting interests.³¹

Capacity building: Due to the technical nature of water conflicts, mediation processes sometimes prepare negotiation parties for the negotiations through joint capacity building on the technical dimensions – irrespective of the specific conflict at hand. This allows the parties to develop a common terminology and understanding, and it can also create trust between the parties. Such trainings can also involve developing negotiation skills, and highlight specific characteristics of water conflicts, or how these were resolved in other cases. Capacity building workshops are often used as a non-threatening, low commitment first step to bring parties together with each other, as well as to bring them into contact with various third parties.

29 Grzybowski, A. (2012) “Suggestions for a Framework for Constructive Dialogue on Natural Resource Issues”, *Working Paper*. Grzybowski, A., J.L. Kaye, (2013), “Mediating Natural Resource Conflicts,” *Working Paper*, finalized version forthcoming by UNEP and UNDP.

30 Gurung, T.R., F. Bousquet and G. Trebil, (2006), “Companion Modeling, Conflict Resolution, and Institution Building: Sharing Irrigation Water in the Lingmuteychu Watershed, Bhutan,” *Ecology and Society*, 11(2), p. 2.

31 A. Castelletti, A., R. Soncini-Sessa, (2006), “A Procedural Approach to Strengthening Integration and Participation in Water Resource Planning”, *Environmental Modeling & Software*, 21(1458).

4.2 Mediating water conflicts at community level

Timeframes: Mediation may be used in local water conflicts when there is an acute crisis, for example as the result of a sudden conflict over access to a water hole due to drought and water scarcity. It can also be used in a more carefully planned manner, when planning or implementing a water infrastructure project for instance. Typically, mediations start as a result of a sudden crisis, and then longer-term analysis shows how these conflicts re-occur periodically. This then leads to a call for a more structured, planned, institutionalized and systematic mode of analysing and responding to conflicts. Such conflict resolution institutions have been called “mediation systems” or “architecture for peace” (see below), and have proven to be more effective than mediation interventions that are organized on an ad hoc basis.

Broad participation: Mediation of water conflicts involving local communities tends to balance more classical mediation approaches, e.g. behind closed doors and strong confidentiality, with broader public participation approaches, e.g. that are open to all concerned and have more transparent outcomes. This has an impact on how the mediation process is designed, set up, and implemented. While these efforts are often shaped by classical mediation approaches, they also have strong cultural elements, e.g. elders, long discussions, as well as aspects of arbitration. Even if a state actor is not directly involved, experience has shown that it is essential to involve the local (and sometimes also central) state actor in the mediation process. One reason for this is that if they are not involved, they may mistrust the process and outcome. Another reason is that the state authorities will usually have the power to ensure agreements are implemented.³²

Power asymmetry: Local communities may lack sufficient power to protect their interests against private business actors and state infrastructure plans. While there is always a certain degree of power asymmetry, one has to be careful if the power asymmetry is large, as mediation may be misused to “sell” a project of the more powerful actor. Capacity building of the weaker negotiating actors may go some way towards levelling the playing field. The power of an actor in most conflicts is shaped by knowledge, as well as political, military, and economic power. Additionally, in water conflicts, geographic location can contribute to power

asymmetry, as the upstream actor has a geographic advantage over a downstream actor.

Link to legal instruments: The mediation of water conflicts should be seen as complementary to legal approaches, rather than as replacing them. When local communities are involved, reaching a mediated outcome tends to be easier if the conflicts and agreement are specific, rather than dealing with broader policy questions for which legal mechanisms for establishing agreement usually already exist. Mediated agreements tend not to be useful for setting legal precedents, as they are generally very much tailored to a specific case. If there is a legal framework that applies and that is relevant, it may then be useful to involve legal advisors in the mediation process, but care should be taken that they do not hinder the informal nature of the mediation process, in which the development of creative “out of the box” options may take place.³³

Conflict resolution institutions / Peace architectures / Mediation systems: Once a community is out of the phase of acute violence, but there is a major probability that water related conflicts will re-occur (e.g. due to patterns of drought), then mechanisms for monitoring and rapid response need to be set up. These mediation mechanisms should be able to perform the following functions: 1) analysis: structural analysis of conflicts and ways of responding, 2) learning and capacity development: capacity to build up expertise over time and transfer expertise as people rotate, 3) policy outreach: activities that seek to influence policy and structural causes of water conflicts, as well as reaching out to the community and constituencies, 4) mediation capacity: the actual capacity to respond with mediation when a conflict is identified. In order to do this effectively such mechanisms require an established structure with a secretariat and management board as well as sustainable funding.³⁴

Fig 3: Peace Architecture in Kenya

In northeastern Kenya, drought in the early 1990s led to clan-based violence over grazing land and access to water. Once an agreement was negotiated to deal with the acute crisis, local actors and state actors agreed to meet periodically (once a month) to monitor and analyze the situation, and, if they saw tensions arising again, to set up a mediation team. (From an interview with Dekha Ibrahim Abdi).

³² Zeinemann, R., (2001), “Characterization of Public Sector Mediation”, *Environs*, 2(49) <http://environs.law.ucdavis.edu/issues/24/2/articles/zeinemann.pdf>

³³ Susskind, L., (2012), *Fifteen Things We Know about Environmental Dispute Resolution* www.mediate.com/articles/SusskindLb120120507.cfm

³⁴ Abdi, D.I., CamelBell Consultants, 29 January 2007 with thanks to Garissa District Peace Committee and National Steering Committee Kenya.

Process Design: A golden rule of mediation is that the nature of the mediation process should fit the type of conflict being addressed.³⁵ This is why it is impossible to prescribe specific set-ups and models of a facilitation or mediation process. At the same time, it is important that processes are not organized in an ad hoc, improvised manner. Once a goal is set, the various steps to get to this goal have to be mapped out, even if things need to be changed later on.³⁶ Key questions of any process are: Who will participate? Will there be a third party? When will participants meet? What is the goal of the process? Where will participants meet? How will the process be financed? What is the decision making procedure (majority vote, full consensus, sufficient consensus etc.).

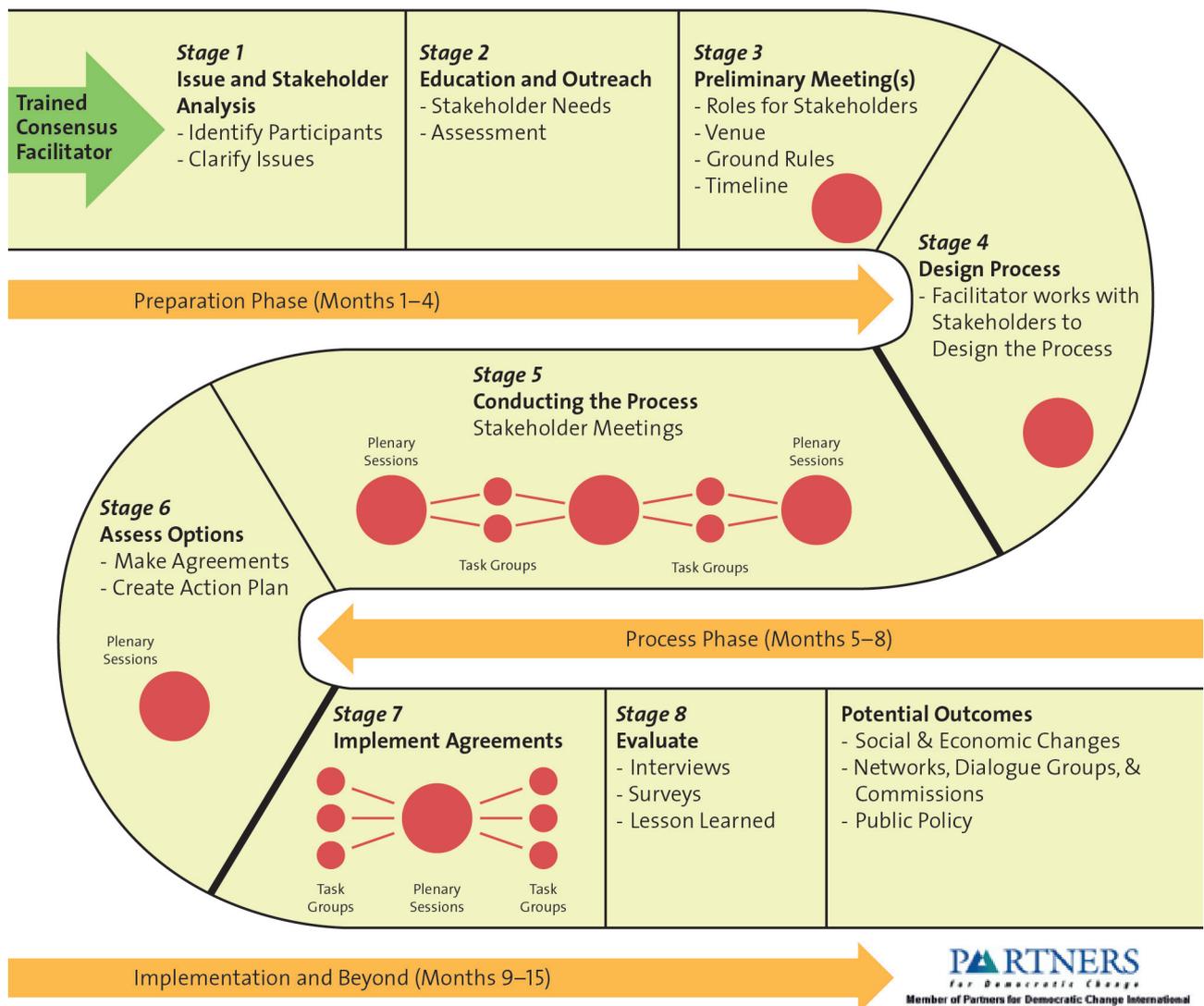
An example of a process design focusing on natural resources is shown below. This model, developed by Partners for Democratic Change, shows how a good process design allows for each process stage to feed into the next. By applying such a framework – that always has to be adapted as things develop – one is much more likely to reach one’s goal.

4.3 Mediating water conflicts in national level peace processes

Scope and Limitations: How does the mediation of water-related conflicts fit into the context of mediating other political, economic, social, legal and security

Figure 4: “Snake” Model: Example of Process Design for Natural Resource Conflicts at Community Level, developed by Partners for Democratic Change

An example of process design and phases: dialogue in LA



35 Hottinger, J. T., Peace Mediation Course Lecture, June 2013, Oberhofen.

36 See p. 68–69, Moore, C., (2003), *The Mediation Process: Practical Strategies for Resolving Conflict*, San Francisco: Jossey-Bass Publishers.

issues in a wider peace process? The goal of a peace agreement is to move a society out of violence, into more peaceful, more democratic means of dealing with differences. It is not desirable that peace agreements should shape long-term development strategies or environmental policies. Peace negotiations generally occur during a volatile time, and the decisions are made by elite actors who have not generally been democratically legitimised. Therefore, peace agreements are not the right time to attempt to set policies in stone. In addition, decentralized water and land conflicts cannot be regulated by the central state once and for all. Peace agreements should establish broad guidelines, commissions and institutional mechanisms for dealing with such conflicts, rather than actually solving the conflict.

Content – Water Use in Peace Agreements: Water’s multifunctionality is reflected in the breadth of ways it comes up in peace agreements. Water is most likely to be mentioned in comprehensive peace agreements as part of wealth-sharing or general social and environmental clauses³⁷, even if elements related to water can also be found in chapters related to security, political and legal issues. Examples of such clauses include those dealing with drinking water, revenue sharing, resource management, water for agricultural and industrial purposes, the reconstruction of sanitation facilities, the repair of damaged infrastructure, and the development of water use infrastructure. Water also comes up indirectly in peace agreements through provisions on navigation, fishing rights, territorial boundaries, taxes, transportation, and rights relating to

Figure 5: Examples of Peace Agreements with Clauses Related to Water

Parties	Peace Agreement	Provisions Concerning Water
Democratic Republic of Congo	Inter-Congolese Political Negotiations: The Final Act 2003	Resolution 21; 23: infrastructure reconstruction/development
Djibouti	Accord de Reforme et de Concorde Civil 2001	Chapter 3, Article 8 : reconstruction of infrastructure, restoration of water supply, continuation of water supply project
Ecuador and Peru	Tratado de Comercio y Navegación 1998	Article 36 : navigation, transportation, trade
India	Bodoland Autonomous Council 1993	Chapter 3, paragraph 30, c: right to tax boat registration, sanitary arrangements for public events, and water rates
India	Memorandum of Settlement: India 1993	Drinking water facilities
Israel-Palestine	Oslo Agreement 1993	Annex III, 1 and Annex IV, 2, B.2: joint water development program as part of regional economic development program
Niger	Agreement Establishing Permanent Peace between the Government of the Republic of Niger and O.R.A. 1995	Section V, clause 22.A. 1 and 2: exploitation of groundwater, agriculture development
Papua New Guinea	Bougainville Peace Agreement 2001	Section 2, 6, 7b: territorial boundaries, revenue sharing, fishing rights, border surveillance, property rights
Sudan North -South	Comprehensive Peace Agreement 2005	Article 2.1 stipulates that “this agreement is not intended to address the ownership of those resources (i.e., land and subterranean natural resources). The Parties agree to establish a process to resolve this issue.” Article 2.6.1, “arbitrate between willing contending parties on claims over land.” Articles 2.6.6.1 and 2.6.6.2 also recognize customary land rights or law.

37 Haysom, N., S. Kane, (2009), *Negotiating Natural Resources for Peace, Ownership, Control and Wealth-sharing*, Briefing Paper, Center for Humanitarian Dialog. <http://fr.hdcentre.org/files/Natural%20resources%20crc%20final.pdf>; Mason, S.J.A., D. A. Sguaitamatti and P. R. Gröbli, “Stepping Stones to Peace? Natural Resource Provisions in Peace Agreements,” in: Bruch, C., C. Muffet and S.S. Nichols (eds.), (forthcoming), *Governance, Natural Resources and Post-Conflict Peacebuilding*, London: Earthscan, p. 4.

property, resettlement and land. For example, the right to fish and to tax boats is not directly related to the water in which these activities occur. Rather, designations of who owns the lake or river affect fishing rights and taxation. Some of the different roles water plays within peace agreements can be seen in figure 5.

The content of a peace agreement should be shaped by the nature of the conflict. Thus the degree to which an issue is contentious is the yardstick of whether it should be addressed in a peace agreement or not, rather than any past peace agreements or generic issue lists. More generally than in the list above, the points below illustrate how and where water may arise in a peace agreement.

Political:

- *Resource management mechanisms:* Policies and institutions for water and land management at the national and sub-national level need to be established. Peace agreements tend to create commissions and to deal with how and when such mechanisms are to be set up, rather than addressing the multitude of local conflicts directly.
- *Conflict management mechanisms:* Mechanisms also need to be established to deal with re-occurring conflicts, for example by creating a framework that encourages the establishment of mediation mechanisms or peace committees (e.g. in Kenya).

Economic:

- *Property rights:* Generally under the heading of land rights, the question of customary or modern, communal, public and private property rights will also include rights to water access and use. Some peace agreements have explicitly recognized the role and importance of customary property rights.
- *Revenue and infrastructure cost sharing:* Revenue sharing and taxation clauses may also include water-related issues. Various power sharing models (devolution, federalism etc.) will have an impact on revenue sharing as well as on how the cost of water infrastructure projects are shared.
- *Development plans:* Unequal economic development within a country may be one major cause of conflict (e.g. Burundi, Sudan, Uganda). Plans to economically develop marginalized areas may relate to water issues. Should a large-scale project be a contentious issue (e.g. a dam or the diversion of water flow), this may also be addressed in a peace agreement.

Environmental and social:

- *Sustainable and environmental protection clauses:* Various ecosystems, and thereby also water systems, may fall under environmental protection clauses. Funds for future generations, or considering the rights of future generations may also be envisioned.
- *Social clauses:* Social clauses dealing with basic rights may also address water issues, especially related to drinking water, sanitation and hygiene. Conflicts resulting from displacement of huge numbers of peoples due to dam projects may also call for socio-economic compensation clauses in a peace agreement.

Security:

- *Water related to armed forces:* Depending on the environment, the need to maintain an adequate supply of drinking water and hygiene facilities for the disengaged security forces will be a topic in ceasefire agreements. If water facilities have been targeted during the fighting, clauses prohibiting this behaviour may be added.
- *Waterways related to territorial demarcation:* Territorial boundaries and security buffer zones may involve water bodies (lakes or seas) or rivers.

Process - Mediating Water Use in Peace Processes:

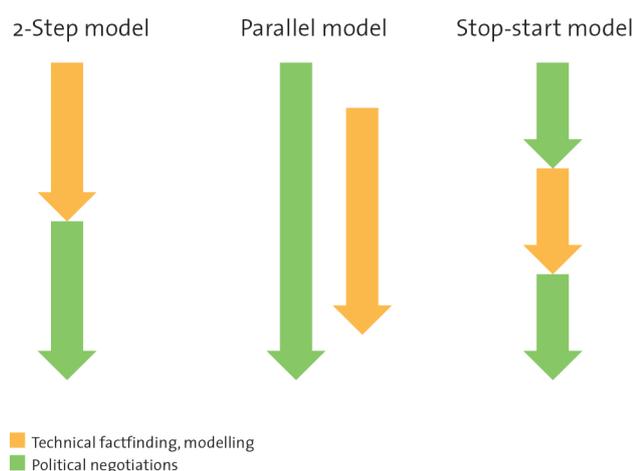
After looking at the substance of how water appears in peace agreements, the following sections focus on the process of how this happens. Most mediation process approaches also work for water-related conflicts. However, there are some aspects that are more important, such as the way in which data and information are dealt with. The technical side of mediating water issues in a peace process may take different forms. The technical data and modelling can be

Fig. 6: Water as a Confidence Building Measure

Cooperative management of water resources can be used as a confidence-building measure to increase trust and humanize conflict parties, and show that they can work together. Water-related confidence-building measures usually occur in the context of a larger peace process in which water plays a non-decisive role, often fairly early on in a peace process. CBMs are used in about 80% of all peace processes. Common development of water infrastructure was used in the Kenya- Somalia context to build inter-community confidence.

focused on before, parallel to, or in between the more political negotiations (figure 7). In the first approach, a wide inventory of existing water resources is carried out before the actual negotiations begin. In the second approach, the political negotiations will create a sub-committee, which will then perform the technical work in parallel, feeding in options as a basis for the strategic decisions that are to be taken by the political actors. The third approach is to start with the political negotiations, pause while the technical committee does its work, and then resume. In peace processes the second framework is most common, as the multitude of issues means that the technical aspects of water-related questions can be focused on in parallel. The main point is that there is no one single way of linking the technical with the more political dimension of negotiations. However, the basic idea is that solid technical and “depoliticized” information is needed for sound political negotiations.

Figure 7: Different ways of combining technical committee work and political negotiations



Framework with technical committee: Keeping in mind the basic frameworks outlined above, the following section walks through a series of steps to illustrate what such a framework might look like in practice. The premise for this framework is that there are other issues besides natural resources and water that will be negotiated, and that there will be a sub-committee working on these issues in parallel to the wider negotiation process. The sequence of some of these steps is not rigid, and some of the steps may overlap. The key point is that information has to be gathered and agreed on, and various options have to be developed and analyzed, before the options that fit the identified interests are selected. Figure 8 illustrates the back and forth that can take place between the political negotiation forum and the technical committee. The technical committee is formed by

technical experts from each party, and, if possible, by neutral third-party substance and process experts. Generally there will be different mediation experts involved, with some of them working on the political negotiations, and others on the technical committee, and all coordinated by the chief mediator.

Step 1: Preparation of a common framework: Preparing and gaining agreement from the negotiating parties on a common framework clarifies the process before the process begins. This is essential in order to avoid data conflicts later on. The framework should clarify by whom, when and how information is gathered, and how it will feed into the generation of options and the actual negotiation process. The framework should also specify the system limits: what water issues will be addressed (the scope of the mediation), who the relevant stakeholders are, the role and status of the mediator, the scope and role of the technical committee, and the scope of the final potential agreement.³⁸

Step 2: Developing a credible biophysical and socio-economic-political data and information basis: Negotiating substance without an agreed-upon information basis does not work, which is why one of the main tasks is to establish commonly acceptable data and standards regarding how this data should be gained and analysed. Nevertheless, complete information will never be available, so the parties have to agree on what constitutes a sufficient information basis for negotiations. Information can be highly divisive and constitute a stumbling block in negotiations. Instead of the parties bringing in independently-obtained information, which the other side will likely see as not valid or heavily skewed, the mediator can use the information-gathering process to build trust among the parties and ensure that all sides are on an equal footing. Agreement on who will collect and verify the gathered information makes the information more credible. The joint capacity building of the various negotiators can also be used to create a relatively equal knowledge base that is needed for the negotiations, as well as to create confidence between them.³⁹ Data and the various documents the parties bring to the table do not make the decisions, but they do nourish the debate. Mediators tend to establish the principle that any data and any document a party

38 Grzybowski, A. (2012) "Suggestions for a Framework for Constructive Dialogue on Natural Resource Issues", *Working Paper*. Grzybowski, A., J.L. Kaye, (2013), "Mediating Natural Resource Conflicts," *Working Paper*, finalized version forthcoming by UNEP and UNDP.

39 Grzybowski, A. (2012) "Suggestions for a Framework for Constructive Dialogue on Natural Resource Issues", *Working Paper*. Grzybowski, A., J.L. Kaye, (2013), "Mediating Natural Resource Conflicts," *Working Paper*, finalized version forthcoming by UNEP and UNDP.

brings to the negotiation table goes into a common pool to which all parties have access.⁴⁰

Step 4 and 6: Develop options and work out details of options:

Options can be developed by looking at examples from other cases, by bringing in experts with comparable experiences, as well as through brainstorming sessions which are informed by technical know-how. Modeling and scenario building (see above) can be useful to develop and test options.

Step 8: Implementation modalities: When working out the implementation modalities, the mediator and

the parties need to strike the right balance between clear implementation modalities and adaptive solutions. Clear implementation modalities spell out what is to be done by whom, when and how, how it is paid for, and what happens if it is not done. Adaptive solutions are more oriented to creating commissions (e.g. agreeing how the various conflict parties and constituencies are represented in the commission) and highlighting what the tasks of this commission will be, rather than actually spelling out their work plan.

Because the use of water changes as an area's economic, population, and social needs change, water

Figure 8: One illustration of how the technical committee work and the political negotiations can interact (models of hydrodiplomacy tend to merge the two columns more heavily).

Political negotiations format	Technical working committee
1. Prepare a common framework with input from technical and political actors. The technical committee can only start work once it has a mandate from the political actors. The technical dimension of gathering and analyzing information can only work with technical input.	
	2. Develop common information basis regarding biophysical and socio-economic-political data (information of resource use). Technical committee reports to political format on existing "situation on the ground".
3. Identify interests related to water that should be satisfied in the final agreement. Political format feeds identified interests into technical committee.	
	4. Develop options: Consider solutions and models from other cases and develop case-specific options that fit interests. Technical committee reports to political format on possible options and solutions.
5. Narrow down possible options: For various non-technical reasons not all options from technical committee may work. Political actors narrow down possible options, and task technical committee to elaborate a select few.	
	6. Work out details of selected options: More detailed elaborations of implications of selected options are worked out in the technical committee. Modelling and scenario-building regarding the impact may also help clarify implications. Technical committee reports the more elaborated options, including their potential biophysical impact, to political actors.
7. Final selection of options for agreement: Using advice from technical committee, political actors decide on the most favorable option, also taking into consideration the other issues and trade-offs that the political negotiations are dealing with.	
	8. Monitoring and review mechanisms: Before the final agreement is signed, the implementation modalities (who does what, when, how, funding, and "what if clause") related to water resources should be agreed upon.
9. Final agreement signed	

⁴⁰ Julian T. Hottinger, interviewed by Simon J. A. Mason, Bern, 4. November 2013.

needs will also change. Bearing in mind that peace agreements are not meant to shape specific long-term development strategies or environmental policies, the mediator can help parties find implementation modalities that allow for flexibility and adaptability. The creation of committees with definitive powers and clear mandates that take into account the needs and interests of the parties with respect to the water under dispute, in order to find solutions that actively change as the parties' needs change, can provide this balance between clear implementation and adaptability. An example of the successful balance that commissions can provide is found in the case of the Indus dispute between India and Pakistan. The Permanent Indus Commission was created to monitor the river, gather information, settle disputes between the parties, and implement sanctions should either party breach the terms of the treaty.⁴¹

- *Political and technical interaction:* How are the political actors going to interact with the technical experts? What process framework best suits the conflict to be addressed? Would some joint capacity-building help to get people up to the same level of expertise?
- *Develop and assess options:* How are options going to be developed and assessed? To what extent can modelling and scenario building help clarify the implications of different options before they are agreed on? How far can other cases be useful sources of inspiration?
- *Implementation:* How can clear but adaptive implementation modalities be designed? How can a balance be found between dealing with specific issues related to water conflicts, and dealing indirectly with water conflicts by setting up mechanisms and procedures to regulate and manage water use?

5. Key Questions for a Mediator

- *Problem statement:* How do the actors define water resources, water use and the nature of the water use conflict? Who decides if the conflict they are addressing is a “water use conflict”?
- *Conflict analysis:* What role do water resources play in the conflict? Who are the relevant actors (including actors not at the table, and future generations)? What are the issues in the conflict that overlap with water resources (economic, political, security, justice)? What are the context factors that shape water use and availability (e.g. climate change, water policies)?
- *Set system borders and delimit issues to be addressed:* How do the parties want to limit the scope of water-related issues to be addressed in the mediation (e.g. biophysical or political system borders)? What has to be decided in the agreement, and what can be delegated to future commissions and mediation mechanisms?
- *Information management:* How should the information be gathered, analyzed and used in the process? What procedure will be used to clarify this, and “negotiate” how information will be managed?

⁴¹ Morrow, J.D., (1994), “Modeling the Form of International Cooperation: Distribution Versus Information”, *International Organization*, 48(3), Summer 1994, p. 387

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“This publication is a very relevant contribution as it provides well-articulated tools and approaches for addressing conflicts over water use at the local, national or transboundary levels.”

François Münger, Head of the Global Program Water Initiatives, Swiss Agency for Development and Cooperation, Swiss Federal Department of Foreign Affairs

“Mediating Water Use Conflicts is an oft-overlooked aspect of peace processes, and this paper offers a unique opportunity for the qualified reader to better comprehend not only water disputes, but also their role in peace processes. It creates an excellent foundation for those who want to enhance the conceptual understanding of water disputes as well as improve their ability to solve them.”

Prof. Dr. Jon Martin Trondalen, Compass Foundation

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