

**Agenda 2030 - Challenges and Opportunities of Transboundary Water Governance: From the
General to the Specific**

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Abstract:

SDG 6.5 aims to *implement integrated water resources management (IWRM) at all levels, including through transboundary cooperation as appropriate*. This is a very broad target and, therefore, hardly actionable. Most, if not all, of the world's transboundary river basins exhibit a wide range of existing water resource issues that are local and unique, so demanding particular actions to ensure that SDG 6 is achieved. Model building and top-down approaches to manage, distribute and govern water are less likely to improve fair, sustainable and equitable distribution of these resources. Thus, to achieve SDG 6.5 in a manner that benefits all stakeholders, it is imperative that stakeholders move from the general goal of treaty-based inter-state cooperation to highly specific, localized, generally accepted policies, procedures and practices. Many studies show that institutional fragmentation is a barrier to the evidence-based collaborative decision-making that is essential to achieving SDG 6.5, safeguarding the environment (SDG 6.6), and advancing socioeconomic development (e.g. SDGs 1 through 12) among transboundary river basin states. Transboundary basin-based initiatives such as the Nile Basin Initiative (NBI), the EU Water Framework Directive and the Mekong River Commission (MRC) show that there are different but related pathways to achieve IWRM in a river basin. However, success is much more than simply signing treaties and agreements. Current challenges among various transboundary river basins show that water agreements and treaties are often considered timeless while the geopolitical environment, demand for water, and consumption patterns within transboundary countries are constantly changing. In this context, 'timeless' looks

more like ‘inflexible’. If there is not a process for ongoing adjustment in agreements, it can lead to conflicts and gaps that give rise to less equitable water governance practices. Increasing operational arrangements for water cooperation in water basins through agreements are less likely to be meaningful unless the operational arrangements are equitable and promote sustainable mutual growth for all stakeholders at all levels. In this paper, we draw on different case studies to illustrate necessary and viable ways and means of moving beyond the general goal of getting to agreement toward actionable elements that will ensure environmentally sustainable, socially equitable and economically efficient water access, use and management in transboundary settings.

Keywords:

Water security, localized IWRM, transboundary water governance, Nile River Basin, Nile Basin Initiative

Introduction

The Agenda 2030 for transboundary water governance strives to expand the proportion of transboundary basin area with an operational arrangement for water cooperation, and achieve IWRM (Integrated Water Resource Management) by creating a better environment for transboundary cooperation (UN, 2016). The stated goal of moving from *nation-based approach* towards transboundary water resources management to *basin-based cooperation structures* faces numerous sociopolitical and economic challenges that are complex, local, and demand careful mapping of interests and concerns at all levels.

The intention to create an enabling environment for all, increasing participation and institutional capacity, ensuring sustainable financing, and introducing better management practices entails extensive efforts to localize the transboundary water resource management SDGs

systematically. To achieve the SDG targets in various parts of the globe, it is essential to encourage personalized strategies that are based on multi-dimensional stakeholder engagement principals that do not leave anyone, especially the vulnerable groups behind. Increasing operational arrangements for water cooperation in water basins is less likely to be meaningful unless the operational arrangements are equitable and promote sustainable mutual growth for all stakeholders at all levels. This paper will discuss the challenges and opportunities of transboundary water governance and attempt to elaborate on the critical components that may help bridge the gap between the stated transboundary sustainable development goals, and the specific, local challenges faced by the communities inhabiting and depending on transboundary river basins. The paper uses the Nile basin as a case study for conflict resolution strategies. The primary goal of the paper is to illustrate several specific ways to achieve SDG 6.5. In our view, Target 6.5 is too general and therefore not actionable; the paper seeks to remedy this shortcoming through actionable processes.

<i>Broad SDG 6.5 targets and indicators</i>	<i>Actionable river basin target</i>
By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	By 2030, achieve IWRM in transboundary river basins through development and implementation of tailored IWRM action plans in 310 transboundary river basins
Degree of integrated water resources management implementation	Degree of the river basin's tailored IWRM action plan implemented and adopted by the transboundary river basin water users
Enabling environment	Presence of organized governing structures that are inclusive and promote an enabling environment
Institutions and participation	Establishment of robust participatory institutions at all river basin levels
Management instruments	Localized IWRM tools
Financing	Strategy for long-term sustainable financing

Proportion of transboundary basin area with an operational arrangement for water cooperation	The proportion of transboundary basin area with a jointly agreed, and active operational arrangement for water cooperation
Existence of a joint body	Existence of an active joint body that represents the interests of all basin stakeholders of all levels
Joint or coordinated management plans or objectives	Develop and implement joint distribution and management plans
Regular, formal communication between riparian countries (at least once a year)	River basin joint body member institutes and organizations attending and participating in all joint body meetings
Regular exchange of data and information (at least once a year).	Development and implementation of shared IWRM information and communication systems to exchange data

This paper is structured around a basic framework that can be used to connect local action to the SDG target 6.5. The paper proposes a systematic approach to identify and engage with all stakeholders of a transboundary river basin as a foundational step to improving transboundary river basin governance and achieving IWRM within a transboundary river basin. This process should be followed by the practice of collecting and coordinating information on the indigenous practices used to manage transboundary water resources, state of local transboundary water governance practices, and existing local IWRM actions. The paper further highlights the importance of localizing IWRM tools and illustrates how some river basins have accomplished this step to improve water management and governance, and how some IWRM interventions, when not carefully designed to meet local needs, could perpetrate further inequalities instead. IWRM in transboundary river basins is challenging to achieve among a transboundary river basin without vital political support, or if local institutes are not methodically empowered to guide the processes that promote IWRM at all levels. Succeeding

sections of this paper underline the critical role conflict resolution and transboundary agreements and how various transboundary river basin stakeholders have managed to collaborate with or without the mediatory role of international institutes and agencies. The last section of the paper elaborates on practices and basin-based initiatives that may help ensure water security and increased cooperation by promoting broader benefits of IWRM among a transboundary river basin.

IWRM in transboundary river basins

The estimated 310 transboundary water basins in the world cover nearly 47% of the total land surface area, host over 52% of the world's total population (McCracken and Wolf, 2019), and account for well above one half of the global freshwater supply. These basins are an engine for economic growth, provide support in various ways to a large proportion of the world population, create interdependencies among basin communities, and hold significant cultural and spiritual significance for many. The various, often conflicting, usages of these transboundary waters make equitable utilization of these resources a considerably complex process. Since most of these transboundary water basins exhibit a wide range of existing water resource issues, model building and top-down approaches to manage, distribute and govern water are less likely to improve fair, sustainable and equitable distribution of these resources. Moreover, as transboundary nations gain and lose power over time, distribution and utilization of transboundary water resources face unique, multifaceted challenges. These challenges often defy the validity and the appropriateness of timeless transboundary cooperation processes and demand holistic approaches that reflect local interests.

The unique characteristics of each transboundary river basin demand unique solutions to achieve IWRM in transboundary river basins. IWRM, defined as equitable, efficient and sustainable use of the natural resources (Swatuk, 2005) involves activities that promote the coordinated

development and management of water, land and related resources in order to maximize equitable socioeconomic welfare without compromising the sustainability of vital ecosystems (UN, 2008). This notion of IWRM is built on four principles, also known as the Dublin Principles, i.e. (a) fresh water is a finite resource, necessary to sustain life, development and the environment; (b) fresh water is a public good, and has a socioeconomic price in all its competing uses and users; (c) water management and development should be done using a participatory approach, involving water users, planning authorities and policymakers at all levels; and (d) women play a crucial part in the provision, management, and protection of water resources (Swatuk, 2005).

The increased consumption of water in many human activities including water to fulfill domestic needs, industrial manufacturing, agriculture, and energy production has significantly increased the demand of this finite resource; this change entails the need to embrace integrated practices to manage, and govern transboundary water resource. This transition is essential to: improve water security among river basins; avoid water scarcity; and sustain natural ecosystems that provide valuable services to both, environment, and human beings. To provide communities with an actionable roadmap to achieve target 6.5, i.e., IWRM in transboundary river basins, this paper is proposing a basic 7 step guiding framework.

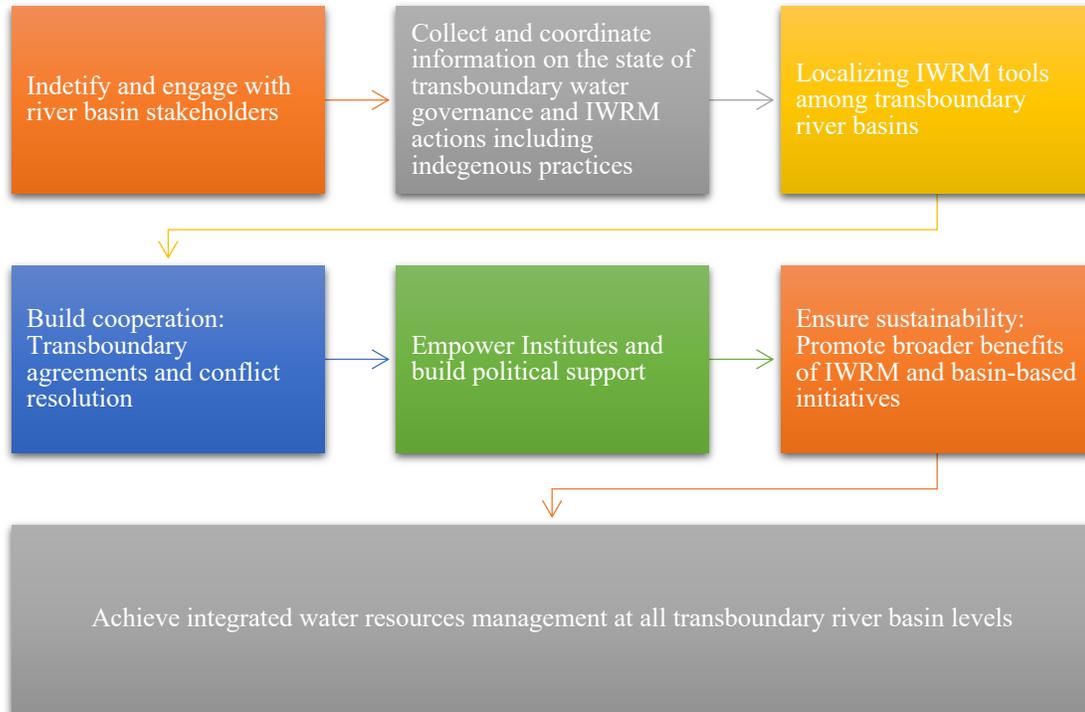


Figure 1: Suggested Framework to achieve IWRM in transboundary water basins. This framework is partially designed using the concept in the IWRM implementation in basins, sub-basins, and aquifers: state of the art review. Source: Kennedy, K., Simonovic, S., Tejada-Guibert, A., de França Doria, M., & Martin, J. L. (2009). IWRM implementation in basins, sub-basins, and aquifers: state of the art review. *The United Nations World Water Development Report*, 3.

Getting Started: Identifying and engaging the stakeholders

One of the central cross-cutting objectives of agenda 2030 is to leave no one behind (Klasen and Fleurbaey, 2018). This objective emphasizes that all SDG targets to be reached by everyone. Another notable argument is that many of the SDGs are primarily concerned with those who are already left behind. The fundamental notion behind IWRM principles and the concept of leaving no one behind is somewhat the same. However, there is no clarity on how either of these concepts can be operationalized. Moreover, some SDG targets, including target 6.5, do not directly focus on people but countries, territories, and basins which makes it critical to identify entities that are the key

stakeholders of these targets as their well-being is impacted by actions and inactions of development actors that are working towards achieving these SDGs.

The notion of leaving no one behind, in the case of transboundary river basins, first demands identifying the ones that are there to begin with. Remarkably, no formal international or regional agency has taken on this task since 1978 (McCracken and Wolf, 2019); currently, researchers from Oregon state university are filling this research and information collection void. Given the changing political boundaries and extensive legal activity around transboundary river basins delineating and periodically updating the world's international river basins is of ultimate importance. (McCracken and Wolf, 2019). The 2019 independent research study by the Oregon State University researchers McCracken and Wolf on the register of international river basins of the world added 35 new international basins to the previous list of international river basins. The same institute updated this list in the past, which was used by the United National Environment Program (UNEP), the custodial agency for target 6.5.2 quality indicators, to report on the SDG progress. Most of the newly added basins are below 10,000 km², relatively small in area (McCracken and Wolf, 2019). How the river basins are defined also changed through this study as the study highlighted that previous classification of international river basins and previous data sets excluded distributaries and the surround deltaic area from basin delineations (McCracken and Wolf, 2019). These gaps reflect the importance of information collection including delineating international basins; and identification of potentially vulnerable communities and individuals that otherwise may not have a strong voice at the national, regional and international forums. It is worth noting that women are often left behind when it comes to the conversation of development policies and decision making. Gender mainstreaming and inclusion of vulnerable stakeholders in decision making is another crucial area of importance that

reflect the critical need to map out and engage with all stakeholders of a watershed to ensure their participation in decision making.

Moreover, the process for monitoring and measuring progress against SDG target 6.5.2, i.e. measure the percentage of the international river basin area with an operational arrangement for cooperation, highly depends on the availability and accuracy of such data. This information is also essential for local norm entrepreneurs and researchers to identify suitable interventions related to the sharing of international river basins.

Incorporating indigenous practices: Collecting and coordinating information on the state of transboundary water governance and local IWRM actions

Understanding local historical realities and water resource management practices is one of the primary steps to achieving progress towards river basin-wide IWRM in a transboundary basin (also called Integrated River Basin Management). There is insufficient attention being paid to adequately documenting the methods and work involving water resource management and integrated resources management practices among transboundary river basins (Kennedy, 2009). Different countries sharing a transboundary river may have a different vision of what IWRM may look like as the needs, climatic conditions, geography, hydrology, and the water resource problems faced by these countries sharing a river basin may differ significantly.

Wolf (1999) argues that countries sharing transboundary water face a two-dimensional problem; first, they have to manage the available water resources holistically within the country and the second is to share the water resources with riparian countries. Without adequately understanding the rationale behind historic water-sharing customs, principals, and practices among local transboundary basins, it may not be appropriate to define what suitable operational arrangement for

water cooperation (success indicator for SDG 6.5.2) should look like. Moreover, depending on the type of river basin and geopolitical environment, feasible operational arrangement through joint bodies, information sharing and collaboration may not concentrate on state actors but also include transnational actors, e.g., international agencies, river-basin organizations, non-profits, and other non-state agencies.

Perceptions of IWRM differ among communities; moreover, collecting local contextual information is vital to understand the local perception of IWRM as the nature of potential interventions highly depend on this baseline information. In 2007, the local state authorities in North-West China initiated IWRM reforms in the Shiyang River basin with an aim for introducing more effective, equitable, and sustainable water management practices. The 2014 Shiyang River basin research finding shows that it may be necessary for state and non-state actors to invest in interventions that focus on local community's collective consciousness, and water knowledge base to increase openness towards IWRM solutions. However, without having adequate baseline information, or processes to collect perception information may be a barrier to successfully implementing IWRM practices.

Recognizing and documenting the multiscale perspective of the state, and non-state actors, historic cooperation procedures among a transboundary river basin is a primary step towards equitable cooperation arrangement. Moreover, prompting IWRM at the river basin level requires combing this information with river basin statistical data, local hydrology, resource utilization trends, and nature of the local economic activity. This baseline information is fundamental to moving towards an arrangement for cooperation that supports equitable utilization and IWRM. Furthermore, the literature on the importance of local stakeholders' participation in IWRM processes argues that public

participation may help fine-tune state intervention approaches and policies to local contexts which can help increase rate of adoption, reduce overhead costs and transform conflicts relations into partnerships and cooperation. (Susskind, 2013).

A practical example of this process is the recent state-of-the-art review of transboundary water governance in the Euphrates–Tigris river basin (Kibaroglu, 2019) that reflects the local IWRM and transboundary water governance practices and a baseline for interventions that could help achieve target 6.5 in the complex river basin of Euphrates-Tigis. However, for most transboundary river basins, such information is not collected, as there is a lack of incentive to document case studies of existing IWRM practices (Kennedy, 2009).

Localizing IWRM tools among transboundary river basins

While institutes and decision makers of transboundary nations may agree upon the concept of IWRM, and recognize its guiding principles as beneficial, course of localizing and implementing IWRM could remain a challenge without substantial adjustment to the broad processes of IWRM within a transboundary basin. Depending on the sociocultural practices in a transboundary river basin, suitable IWRM practices, in some cases, may look very different as a globalized form of IWRM is of inadequate use when attempting to change localized management practices in basins with deeply rooted socio-cultural practices (Swatuk and Motsholapheko, 2008). Mehtonen et al. (2008) suggest that the general concept of IWRM is too broad and theoretical to be successfully applied in transboundary river basins around the globe without extensive localization. Acharya defined localization as a multifaceted process and outcome by which norm entrepreneurs shape congruence between transnational norms and local ideologies, values and practices (Acharya, 2004 in Swatuk, 2005). Localizing the concepts and processes of IWRM is fundamental to the long-term success of

IWRM; as Swatuk (2005) cautions that there are practical concerns about IWRM's broader applicability among transboundary river basins in the global south, signifying that: while motives for IWRM reforms are partially local, the ideology of IWRM has been developed in the western world and it cannot be easily transferred to the other parts of the world.

There are some primary tools, flexible enough to meet the requirements some IWRM that can be used in most transboundary basins. For instance, applying the Analytic Hierarchy Process (AHP) to IWRM to develop a model for water resource management in transboundary river basins by using stakeholder participation is a common tool used to engage transboundary river basin stakeholders. Such tools have been successfully used to bring local stakeholders together in various river basins including Pranburi basin, Thailand (Thungngern, 2017) and Incomati River Basin, Mozambique (Gallego-Ayala, 2014). Another example of developing IWRM tools that can be used at the regional level is the development of The Caribbean Drought and Precipitation Monitoring Network; Caribbean National Water Information Systems; and Caribbean Community Water Strategies to implement IWRM within the Caribbean countries (Senecal and Madramootoo, 2013). These tools may help enhance cooperation between communities sharing a river basin and improve water governance practices.

However, there is a need to synthesize IWRM methods, practical guidance, and solutions that are personalized for each transboundary river basin and geographic area; tools and solutions that are built on the experience of the systems approach, compatible with local political systems, and focus on the feedback relationship between local ecological and socioeconomic sub-systems. These tools should help identify, understand and integrate all variables and relationships that are exogenous to IWRM within a transboundary river basin. Without a certain degree of public participation and local

research to develop home-grown IWRM tools and solutions, IWRM may remain disintegrated. Yu (2014) argues that most of the IWRM research studies have focused on the argument of potential implementation opportunities and challenges from outsiders' perspectives. In order to meaningfully localize IWRM, there is a need to incentivize local researchers to conduct local research and find feasible solutions within a transboundary basin that match local needs. It is worth mentioning that there may be a need to localize IWRM solutions and tools down to the community level and build the processes up from that point to reach basin-wide consensus and solutions. Although IWRM literature highlights the vital role of local stakeholders, local contexts and scales of river basins, in most river basins, both: water policies; and research on IWRM focuses on national or regional perspective rather than a local, community level perspective (Yu, 2014).

IWRM policies that are not implicitly localized could instead increase bureaucratic control of water and lead to inefficient water uses and water security issues, e.g. unfair quotas; unreasonable irrigation schedules. For example, during a 2014 survey, while the overall income of the community increased, the majority of the small farmers of Shiyang River basin agreed that IWRM policies had unavoidably reduced their agricultural income. Among 162 survey respondents, 63% said their income had fallen since the 2007 IWRM reform, 23% said their income remained more or less the same, and only 13% of the respondents believed that their income had risen (Yu, 2014).

Empowering institutes and building political support

The involvement of stakeholders and localized IWRM tools cannot automatically achieve the objective of sustainable and equitable water resource management in a transboundary river basin as achieving these objectives largely depend on the institutional and political processes that are mandated to guide the water governing process. Changing the social-ecological situation in the

transboundary river basin demands change in governance systems and institutions. Fragmented institutions are a barrier to evidence-based collaborative decision-making that is essential to achieving WRM, safeguarding the environment, and advancing regional socioeconomic development in the transboundary river basins. Moreover, the notion of building IWRM solutions based on indigenous methods is hardly possible without recognizing the political environment and acquiring needed political support.

As elaborated by Sokile and van Koppenin in Swatuk (2005), the process of recognizing and embedding indigenous practices in IWRM reforms faces a challenge of political harmony as often formal institutes tend to invalidate the decisions of traditional, informal mechanisms. A region's social capital and ability to introduce and implement fair and equitable water governance policies dependent upon the relative strength of local and regional institutions. Moreover, depending on how institutions are empowered, institutions are both barriers to and opportunities for sustainable management of resources development (Swatuk, 2005). Developing and advancing institutional structures and systems that promote long-term sustainable water utilization in the transboundary river basins may require a rethinking of how state departments of riparian basin countries interact with each other and with non-state entities. A few examples of how various regions have improved water governance practices by concentrating on strengthening institutes include: work of IDB-Institute for the Integration of Latin America and the Caribbean (INTAL) in La Plata Basin Development Program (Mehtonenet.al, 2008); and the transformation of San Diago's water management institutes (Denennis, 2018).

Literature suggests that the political environment in a transboundary river basin and the degree of trust in political practices significantly impacts participation and cooperation, and influences

support of policies and decisions without compulsion (Thwaites, Curtis, and Millar, 2012). Political distrust among different stakeholders of a transboundary river basin could create further complexities and resistance as the presence of political distrust and doubts towards local government, or riparian governments tends to considerably influence perceptions that guide the adaptation of IWRM at river basin levels. Political distrust may arise because interests and needs of different nations may vary; this could lead to nations developing diverging resource management policies and plans, which are may not be compatible with the interests of riparian nations (Savenije, 2000). When these conflicting policies and plans are coupled with resource scarcity and power imbalances, transboundary water basins may become tense arenas for “competitive exploitation” by riparian nations; and politics stands at the center of these problems (Swatuk, 2005).

These factors raise the critical questions: If political support is essential to induce equitable and sustainable water governance policies and IWRM in a transboundary river basin, what factors influence political harmony in a transboundary river basin? What steps can be taken to increase political support that may lead to improved transboundary water governance policies that promote equity and sustainable growth? How have some regions successfully managed to overcome or “bypass” political differences to improve water governance in a transboundary river basin? Answers lay in the dynamics of power as Mirumachi (2007) reasons that power relations among transboundary basin stakeholders shape the courses of basin’s political environment, and asymmetric power is evident in the results of transboundary water management realities and the course of transboundary water governance.

Achieving SDG 6.5, without taking into account the power difference among different transboundary riparian nations may not be possible. The comparative power differences among

different nations sharing a river basin can result in different forms of “hydro-hegemony” among a shared river basin (Zeitoun and Warner, 2006). A guiding framework that can be used to understand how power dynamics turn into a political tool and change agent in a transboundary river basin is the framework of Hydro-Hegemony. The Framework of Hydro-hegemony has been applied to the Nile, Euphrates, and Jordan and Tigris and river basins to understand how power dynamics impact transboundary water governance and IWRM. Utilization of this framework by Zeitoun and Warner (2006) in various transboundary river basins suggests that it is a powerful tool to recognize how power, through intimidation, agreements, and knowledge construction can change the way transboundary water resources are managed and shared between transboundary nations. According to this framework, on one hand, if a transboundary basin nation with greater power acts for the communal welfare of the river basin, there is leadership in this method of hydro-hegemony; on the other hand, if the transboundary nation with greater power simply focuses on capturing and controlling the water resources for its own benefit, or intimidates other riparian nations to produce self-serving outcomes, there may be discriminatory water governance and water allocation outcomes (Mirumachi, 2007).

One successful example of how political support of a powerful nation can play a positive part towards improving transboundary water governance is the role of Germany that took the lead to successfully overcome historical political differences and improve transboundary cooperation among the European Union. However, when compared with other regions of the world where resource scarcity, poverty, aggressive nationalism, and intense rivalry for transboundary resources continues to reinforce self-protective political conduct, the role of Germany and European Union's cooperation success might even be unique (Scott, 2000). Moreover, other variables including the local notion of

sovereignty; lack of financing, the scale of the basin, and history may require entirely different strategies to cultivate political support, cooperation, and political harmony in other transboundary basins.

Building cooperation: transboundary agreements and conflict resolution

Conflicts over freshwater resources may become more frequent as pressures on water resources grow due to increased demand and variability of rainfall. Conflicts may take place between or within countries or between competing sectoral users. Instead of being zones of conflict, shared water resources can provide a basis for cooperation and benefit-sharing provided that threats to the international waters are recognized and collaborative structures are created. UNEP's book from conflict to peacebuilding (Halle, 2009) illustrated examples on the role of natural resources and the environment in integrated peacebuilding strategies incorporated with Lederach's peacebuilding model (1995). The model showed that working through the strategy showed high-level of international influence impacts communities that do not have a seat at the table of high-level international development organizations. Global development institutes are focused on promoting regional economic efficiency, ecological sustainability and social equity among transboundary water basins and nations. Consequently, working through those frames of references can be a small stone building coherent steps for achieving SDG 6.5 especially the second target of having operational transboundary areas of work between states and local authorities, that would allow building consensus around water management should be integrated and involve a multidimensional approach for better resource sharing using sustainable practices, that will not in return compromise current local development needs, or the needs of any future generations.

Peacebuilding Process

Water conflict cases should be approached from all levels of society. It is not only a matter of conflict between countries, but it is a user based conflict for all its consumers. Having a small water stream, if it is polluted from an individual decision-making activity, it can influence all of those in the downstream side of a river since they all rely on the same water system. This type of intervention can create conflicts. However, most conflicts over water results from how to maximize the utilization of the water use to meet the growing stresses (Swain, 2016). Such types of transboundary water collaboration processes must be seen as from a pragmatic nonviolence approach as discussed in Dudouet (2011).

A key aspect within the local lens, is working with most vulnerable groups and gender equality. The Millennium Declaration of 2000 resolves to promote gender equality and the empowerment of women to combat poverty, hunger and disease and to stimulate sustainable development (UN, 2000). Globally, women comprise almost 45% of the agricultural labor force, and this percentage is significantly higher in many of the African transboundary nations where most of the agricultural production comes from small farmers, most of whom are women (Earle, 2013). This reflects the critical need for reviewing transboundary water governance, and management policies with a key focus on women's participation in decision making.

IWRM and Institution Building

Increased acceptance of IWRM creates a pathway to shift from state-based transboundary water governance policies to a basin-basin cooperative system for governing and managing transboundary water resources. In many cases, the role of transboundary basin initiatives is limited to trust building. Example of the Nile Basin Initiative (NBI) demonstrates that organized basin-based groups often lack adequate power to enforce policies that promote equitable water resources. However, some basin

based initiatives that have met some success in promoting IWRM at the transboundary river basin level show that there are several ways to achieve IWRM in a river basin. One example of these organized efforts is the International Boundary and Water Commission of the USA and Mexico which cooperatively manages the Colorado and Rio Grande river water resources. Senegal River Authority (OMVS), which jointly manages the Senegal river basin, is another model roadmap to achieve SDG 6.5. OMVS helped Senegal and Mauritania to negotiate the mutually beneficial sharing of the water after the 1988 conflict (Kliot, 2001). Another example of joint river basin management is the Mekong Commission which jointly manages the lower Mekong Basin; however, two of the upper Mekong Basin members, China and Myanmar, are an exception to this cooperative management. The success of organizations which were founded on the notion of basin-wide joint management lies in their territorial coverage and broad functional frameworks.

Concluding Comments

This paper presented findings relevant to the general SDG 6.5 which aims to implement integrated water resources management (IWRM) at all levels, including through transboundary cooperation as appropriate. The broadness of this goal and its supplementary targets is a barrier to action. Practical examples presented in this paper illustrate necessary and viable ways and means of moving beyond the general goal of getting to agreement, toward actionable elements that will ensure environmentally sustainable, socially equitable and economically efficient water access, use and management in transboundary settings.

The notion of appropriate transboundary cooperation is dependent on the distinctive characteristics and the unique history of transboundary basins. In most transboundary river basins, water availability, management history, and consumption trends differ significantly. These factors

accompanied by rapid population growth, maldistribution and over-utilization of water resources transform transboundary river basins into arenas with a range of issues that are unique to the particular river basins. Achieving SDG 6.5 in these transboundary river basins demands tailored actions that are based on ground realities of these basins; it may be impractical to depend on top-down approaches, and portable lessons from elsewhere as model building approaches to manage, distribute and govern water are less likely to improve fair, sustainable and equitable distribution of transboundary water resources.

The examples of transboundary basin-based initiatives such as the Nile Basin Initiative (NBI) and the Mekong River Commission (MRC) show that there are different but related pathways to achieve IWRM in a river basin. However, success is much more than merely signing treaties and agreements and requires basin-wide action at all levels. Thus, to achieve the SDG target 6.5 in a manner that benefits all stakeholders in a transboundary river basin, it is imperative that stakeholders move from the general goal of treaty-based inter-state cooperation to highly specific, localized, generally accepted policies, procedures, and practices that interlock with basin-wide development strategies.

Transboundary river basins differ in their international transboundary relations, which in part is defined by the strength of their institutes, political economy, and the asymmetric power among transboundary riparian nations. Impartial leadership by the more powerful nations can strengthen institutes which govern transboundary water resources, and encourage adoption of better governance practices; however, high transaction costs of establishing and sustaining the institutions remains a critical challenge for many low-to-medium income transboundary basins. Institutional fragmentation is a barrier to the evidence-based collaborative decision-making that is essential to achieving SDG 6.5, safeguarding the environment (SDG 6.6), and advancing socio-economic development (e.g.,

SDGs 1 through 12) among transboundary river basin states. Sustaining the commitment and resources necessary to make the ambitious SDG targets actionable for nations and communities will continue to be a challenge and will demand ongoing vigilance to ensure that meeting local development needs is not silent and invisible in the SDGs adaptation process.

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