



Review

Conflicts and security in integrated water resources management

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ARTICLE INFO

Keywords:

Integrated water resources management
Water governance
Water conflicts
Peace and security
Sustainable development agenda

ABSTRACT

Water sector reforms based on the concept of Integrated Water Resources Management (IWRM) are criticized for not considering context, local realities or legitimacy during the implementation of water sector reforms. Universal remedies of IWRM can thus lead to resistance, conflicts and ultimately failures of interventions. This paper examines how conflicts and disharmony can be addressed by IWRM's instruments. It conceptualizes institutional security as a highly relevant issue to be addressed during water management interventions. Further, the paper advocates a reform of the holistic concept of IWRM to incorporate 'peace and security' as a new pillar of water management based on a broad understanding of societal goals that are embedded in the principles of good governance and sustainable development. It also reviews recent criticism of and debates in IWRM and explains the advantages of expanding the normative idea behind it.

1. Introduction: current state of water sector reforms

Water management has been in a state of constant change since the first Rio conference in 1992. Water sectors across many countries have reacted to increasing risks and water crises by adopting new institutional frameworks, decentralizing water resources planning or developing new infrastructures. According to a comprehensive status report by the UN prior to the Rio plus 20 conference in 2012, 82% of the 130 surveyed countries indicated the adoption of reforms to improve an enabling environment for IWRM, 79% changed their water policies, 65% have adopted Integrated Water Resources Management (IWRM) plans, and 71% facilitated water management at the basin level (UN, 2012). Such worldwide wave of restructuring and reforms has left its impact on the water sectors in terms of performance improvements in some countries and the emergence of an array of new water institutions like water ministries, basin agencies or regulatory bodies (Ait Kadi, 2014). While scarcity and crises represented the drivers of reforms, the ideological reasoning and implementation blueprint were provided by celebrated concepts such as water governance and IWRM. Both concepts have generated a great deal of attention and confusion among scientists and practitioners. While water governance in its original meaning was more concerned with 'rules of the game' or the set of principles to ensure 'effective' or 'good' governance, this understanding has been supplanted by or incorporated within IWRM or extended concepts of it emphasizing a principle like inclusiveness or effectiveness (Lautze et al., 2011). In its pure understanding, IWRM, a term influenced by advocacy and literature of Global Water Partnership

(GWP) since 1996, has referred to practical measures to align water management decisions to predefined water governance principles, especially those set in the international consensus of the Dublin Principles of 1992. For many countries, (good) water governance principles and IWRM meant initiating reforms to increase participation, e.g. of women or affected communities, decentralize water management, often to the basin level, introduce economic instruments and commercialize water institutions, and introduce integrated water plans and laws.

Water sector reforms have not, however, been an all-round success nor have they halted the water crisis. IWRM and water governance principles triggered serious changes in terms of policies, laws and institutions. Water management reforms can fail for a multiple of broader socio-economic factors like lack of funding, political instability or the interference of global drivers like trade policies or droughts (e.g. Warner et al., 2015). However, stakeholder engagement and participation in water management institutions and decision are key premises of IWRM, which remain relatively low while the financing of these IWRM institutions, and importantly of water services, remain weak and has not changed significantly (UN, 2012). Criticism regarding the lack of significant, tangible improvements related to IWRM implementation has been around for a while now (Allan, 2003; Biswas, 2004; Blomquist and Schlager, 2005). While IWRM's role in consolidating water management functions and initiating institutional and legislative reforms across countries is undeniable, its implementation did not meet the initial expectation of producing a comprehensive policy solution to national water management challenges. Recent evidence continue to show

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mixed outcomes from IWRM implementation, for example in Bangladesh (Rouillard et al., 2014), Zimbabwe (Derman and Manzungu, 2016) and Tanzania (Van Koppen et al., 2016). Criticism of IWRM is being reiterated recently in the wake of the emergence of new environmental sustainability paradigms like the water, energy, and food nexus (so-called WEF nexus). Some scholars see the Nexus as a chance to alleviate the disappointing outcomes of IWRM, and the Dublin principle (Beck and Villarroel Walker 2013; Perrone and Hornberger, 2014; Benson et al., 2015; Muller, 2015). Within the WEF nexus, which presents an idea propagated by many water scientists (Allouche, 2015), water issues are given a special consideration and a central place (Beck and Villarroel Walker, 2013; Perrone and Hornberger, 2014). The nexus idea follows a similar integrative approach as IWRM and its emergence is directly related to IWRM failures (Al-Saidi and Elagib, 2017). WEF nexus is still heavily debated. Some predict the same fate for the nexus as with IWRM in terms of not resulting in noticeably enhanced policy processes (Wichelns, 2017) or see it as an ‘integrative imaginary’ or a ‘buzzword’ (Cairns and Krzywoszynska, 2016). On the other hand, the nexus is seen a promising concept which can lead to significant reforms that link water to neglected issues in IWRM, like agriculture and trade (Allan, 2015). It must be operationalized via thresholds and data-supported models (Kurian, 2017) and a greater experimentation with tools and institutional arrangements at different levels of the policy-making value chain (Al-Saidi and Elagib, 2017).

Water scientists are deliberating the concept of water governance in light of the mentioned failures. Gupta et al. (2013) highlighted the need for a “normative framework” to enhance coherence between different levels of water governance that should be supported by policies, instruments and organizational frameworks. Wiek and Larson (2012) categorized (normative) guidelines for natural resources governance according to whether the analysis perspective focuses on socio-ecological systems, actors, values and goals or on comprehensive principles for water sustainability. They proposed an analytical framework for water governance interventions by focusing on what actors do and the outcomes of such activities on various components of the social-ecological system in clearly delineated areas. This framework is complemented by a set of principles for sustainable water governance, which include “hard” measures like integrity, efficiency, sufficiency, precaution and interconnectivity. Such principles entail an array of demands on water managers to adhere to boundaries, flows, qualities and abstraction rates, reduce inefficiencies or negative impacts and deal with uncertainty. “Soft” principles like civility and equity represent outcomes of processes to ensure stakeholder participation, justice and fair representation. The sustainability criteria by Wiek and Larson (2012) represent a compilation of various normative principles proposed by other authors that can be systematically used to generate to identify water governance gaps (e.g. application for Costa Rica by Kuzdas et al., 2014). Similarly, Pahl-Wostl et al. (2013a) assessed the state of knowledge on water governance- and identified two gaps: missing or “weak properties” of leadership, legitimacy, representativeness or comprehensiveness; and missing links between elements which reduce the effectiveness of water governance. While the mentioned WEF nexus paradigm might address some issues in the second gap of water governance identified by Pahl-Wostl et al., this paper argues that the first gap can be mitigated by extending the normative principles that underlie the designing of the IWRM concept. This paper sees an opportunity to use some extensions of sustainable development understanding with four instead of three pillars: efficiency, sustainability, and equity, alongside ‘peace and security’, as an opportunity to introduce conflicts, security and peace as a central issue into the IWRM framework. The failure of IWRM to address water governance principles like those identified by Pahl-Wostl et al. (2013a) as weak prosperities or some key sustainability criteria put forward by Wiek and Larson (2012) results in reform resistance and stalemates, short-sighted measures and institutional conflicts and can lead to failures of measures or even to violent outcomes. IWRM does not provide solutions to these problems

nor does it incorporate the issues related to security adequately. The paper outlines the arguments for addressing these issues within IWRM and highlights the benefits in terms of achieving key water governance principles such as contextuality, legitimacy, representativeness and ownership.

2. Merits and reform needs Of IWRM

2.1. Conflict and resistance as key restraints for water sector reforms

The implementation of IWRM in many developing countries has met serious resistance not only of the powerful agricultural interests related to the ‘old’ water resources development paradigm, but also among water sector practitioners. Evidence of such resistance can be retracted from a growing criticism of IWRM in the last years and documented cases of failures due to low participation and the missing perception of ownership – e.g. South Africa (Swatuk, 2005); India (Shah and van Koppen, 2006); and Sri Lanka (Samad, 2005). Resistance to reforms can lead to institutional conflicts and power games hindering reforms. Yet, what are the drivers of conflict in adopting IWRM reforms that can produce failures? In literature, one finds two main and interrelated explanations: lack of contextuality and the perception of illegitimacy. These two broad reasons are consequences of the reforms’ failure to implement key good governance principles like adaptability and institutional fit, participation, accountability, transparency, representativeness or ownership.

Regarding the first explanation, IWRM in many cases did not consider the political and institutional realities of developing countries. Such criticism is largely based on the notion that IWRM is more suited to the needs of developed rather developing countries. Allan (2003) argued that water policies in the global south follow a more political and discursive process than the technical (demand management, basin management, rights etc.) procedures of the north. This notion has been reiterated by Butterworth et al. (2010), who criticized IWRM of not considering the local reality by using the same IWRM remedies and of neglecting the political context (“depoliticising”). Research shows that water management issues and priorities are different in developing and developed countries (Hooper, 2006). Similarly, Beveridge and Monsees (2012) explained that IWRM ignored development politics in southern countries and lacked sensitivity to traditional and informal institutions. Another aspect of weak contextuality is the lack of institutional fit in implementing IWRM. As evident in cases in South Africa, reforms are not considering existing laws and institutions. This leads to institutional interplay and problems of coordination (ibid.). The second explanation for IWRM failures is with regard to the perception of illegitimacy reforms. This arises from the failures of IWRM to rally crucial stakeholders behind the integrated management idea. Case studies in Asia and Africa show that local stakeholders lack genuine interest in involvement in IWRM reforms such as basin management (Bandaragoda and Babel, 2010). Such reforms can be highly influenced by translation and perception and also placed in a complex setting with overlaps between formal and informal actors (Mehta and Movik, 2014). Stakeholders might often develop ‘negativism’ toward project-based reforms and are rather concerned with issues like fighting corruption and nepotism. In fact, the short-terminality and project-thinking are important constraints on water reforms and management and might delegitimize reforms. Allan (2012) concluded in the case of Australia that ‘projects’ can encourage short-term planning, risk-avoidance and power asymmetries as they are tied to financial and political cycles. One reason for this is the fact that IWRM, the birth-child of ecologists and practitioners, is thus not people-centered, and fails to integrate the interests of utilitarian use (e.g. agriculture and water suppliers) (Butterworth et al., 2010). It thus pays lip service to people and participation of all stakeholders (ibid.) and leads to misrepresentation, especially of local communities through opportunistic NGOs, missing accountability and inequities (Beveridge and Monsees, 2012).

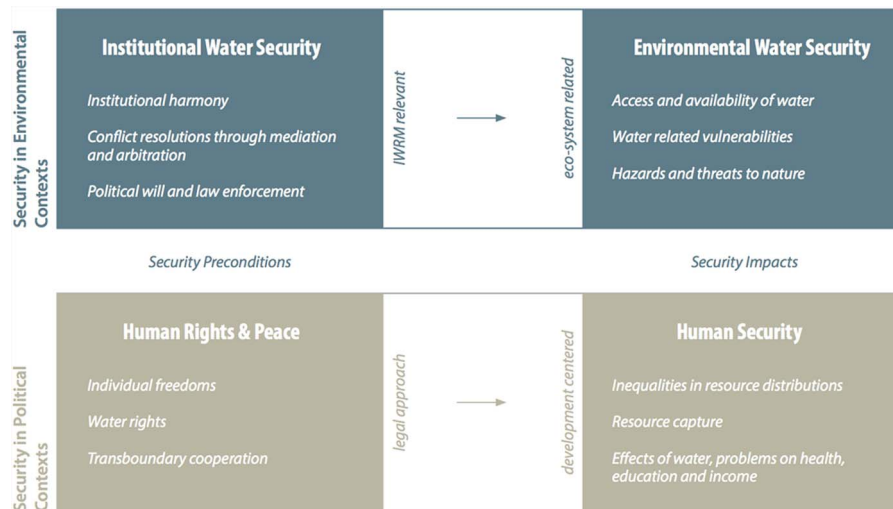


Fig. 1. Comprehensive security understandings for the water sector.

2.2. Universal remedies of IWRM

The inability of IWRM to tailor solutions to complex and distinct realities of developing and developed countries and the failure to create democratic or “good governance” practices necessary for establishing a sense of legitimacy over the reforms hindered its implementation and created a notion of irrelevancy of IWRM, especially for developing countries. Some authors thus evaluated the IWRM to have led to no real or limited improvements or benefits while being costly and a mask for other agendas (Biswas, 2004; Mollinga et al., 2007; Molle, 2008; Butterworth et al., 2010). It is also expert-driven (Conca et al., 2006), fuzzy and relies on policy-makers to achieve the promoted integration (Jonker, 2007). As a consequence, IWRM is sometimes not needed or necessary, and other means can achieve the same objectives. In this sense, Giordano and Shah (2014) argued that one should move back from IWRM and focus on solutions to specific problems rather than holistic solutions. Accordingly, by producing standard solutions like the basin approach, water pricing and demand control, which are based on universal principles like sustainability, equity and efficiency, IWRM has often become an end in itself despite the existence of better alternatives in terms of solutions and means.

In the point of view of this paper, the arguments that IWRM's ‘technical’ solutions should not be universal remedies and can be better replaced by other context-specific arrangements does not empty the core idea behind this concept, namely the need for a comprehensive and integrated vision for reforms based on what we consider ‘sustainable’ in the water sector. Regardless of means or technical approaches, the popularity of IWRM is due to the consensus behind its guiding principles, i.e. the Dublin Principles and the sustainable development concept of the 80s and 90s. Besides, as evident in the Nexus debates mentioned earlier, integrated solutions based on global sustainability consensus are still highly demanded. However, the idea of sustainable development has undergone refinements to make it more comprehensive. The most important advancement of the concept is arguably the incorporation of peace and security aspects (e.g. Picciotto and Weaving, 2015; Granit et al., 2015). While peace has been an overarching goal of sustainable development, the reduction of armed conflicts and measures for conflict resolution were not included in the sustainable development agenda. Such issues were not a part of the human development consensus in the past nor were they translated into development goals. Due to the alarming evidence about the costs of conflicts to human development and economies and the emergence of human security concepts related to sustainable development, security has now surfaced as a part of development concepts and means. Conflicts worldwide are costing around 13% of world's GDP in 2014,

more than three times higher than the global growth rate of 3.7% in the same year (Institute for Economics and Peace, 2015). In comparison to IWRM's evolution, the bulk of criticism of IWRM was directed toward its solutions (means) and their adequacy for different environments. Neither the sustainability concept of IWRM nor the Dublin Principles witnessed any major revision. Meanwhile, conflicts and lack of insecurities are major issues in implementing water reforms in terms of institutional fighting, disrespect of laws, corruption and resource capture, etc.

3. Water security as institutional harmony and peaceful cooperation

3.1. Water security discourses and conception

The concept of peace and security has become a central pillar of the sustainability and sustainable development, which are arguably the underlying norms behind IWRM. In fact, the concept of peace and security can provide an important added-value to IWRM and facilitate its success. However, it is important to define which security one talks about before promoting this term as an integral part within the IWRM design. In order to arrive at this definition, a ‘terminological differentiation’ based on a semantic disassociation of different security terms is provided in this section. A detailed ‘content description’ of the right security term is provided by the next section.

In water management, there is a multiplicity of competing discourses on security. The paper argues that the emerging discourse on what this paper calls ‘institutional water security’ is the one most relevant for IWRM. Fig. 1 gives an overview of security conceptions or discourses relevant for water management in order to set them aside from this specific security concept used in this paper. It also gives examples of water-relevant issues under each security discourse.

In academic literature, one should first differentiate between security discourses in political and environmental contexts. The first line is broader and more related to the issues of socio-economic development and sustainability at large. Water relevant security discourses under this line can be described to be associated with ‘water politics’ at large and with the involvement of ‘water stakeholders’ both vertically (from policymaking at macro level to water users at micro level) and horizontally (across water-related sectors). The second line relates to specific issues of environmental management and environmental sustainability. Here, relevant water security discourses are related to the core task of ‘water management’ and driven by what one calls ‘water practitioners or professionals’. Common to all security discourses is the focus on ‘conflicts’ as both the most evident manifesta-

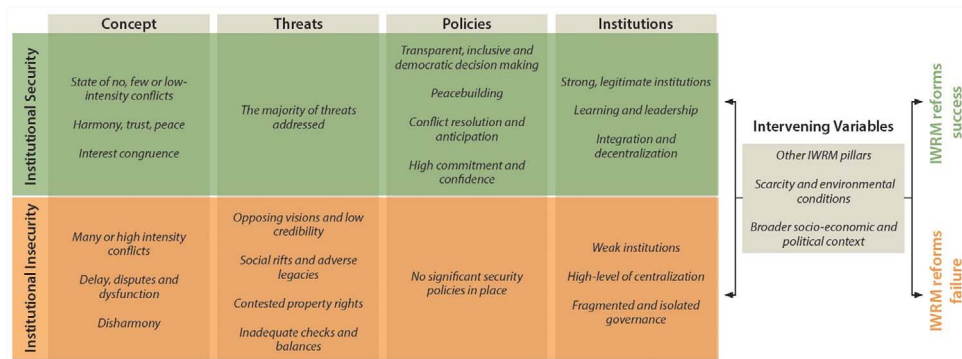


Fig. 2. Security conception and IWRM success (using Dimitrov, 2002; Hileman et al., 2016; Kuzdas et al., 2016).

tions as well as the drivers behind insecurity. Security is therefore often understood synonymously with a conflict-free state, but seems to imply more than that. While a state of insecurity is characterized by many conflicts, a state of security is described in literature in terms of no, few or insignificant conflicts, and also in terms of predominance of peace, harmony, trust, congruence etc. Another differentiation is whether a certain security discourse focuses on how to tackle the ‘root causes’ or ‘security preconditions’ or how to respond to the ‘impacts’ of various conditions leading to insecurity. While the first discourse focuses on use histories, processes, institutional set-up and rights, the latter is more concerned with performance and options to improve the current problematic state of development and resource use. In political discourses, the concept of human security is the broader, more established and development-centered than the legal approach to security using rights and peacebuilding measures. Human security was originally promoted in the 1980s for broadening state-centric discourses of security and was later embedded in the philosophy of the UN institutions and development aid agencies (Andrews-Speed et al., 2015: 80). Although closely related, the discourse on peace and human rights as preconditions of security is quite popular, also increasingly among water practitioners. In this discourse, security is thus a state related to the rights and freedoms of individuals from fear and want (Kaldor, 2011). The UN’s declaration of water as a human right corresponds with this notion. Besides, water-driven wars and transboundary armed conflicts over water threatens the peace of individuals although empirical evidence support for such phenomena is scarce (Wolf, 1998). Questions about resolving transboundary water issues and conflicts are closely related to this human security notion (e.g. Petersen-Perlman et al., 2017).

In environmental contexts, water security is the most popular conception representing an emerging paradigm in water management (Cook and Bakker, 2012). This concept is often understood in terms of necessary or acceptable quantity and quality of water for different water uses (Grey and Sadoff, 2007) and is used to define thresholds or necessary governance measures to achieve them (Pahl-Wostl et al., 2013b). Other understandings of water security focus on water-related hazards and vulnerability, human needs sustainability of ecosystems (Cook and Bakker, 2012). These concepts of water security can be framed with the overarching concept of environmental security defined as ‘security from environmentally induced conflicts’ (Dimitrov, 2002). While environmental water security is largely concerned with ecosystems’ performance, status and broader policy responses, ‘institutional water security’ is promoted in this paper as the right security discourse to be incorporated within IWRM. In fact, this discourse is just beginning. Recent case study reviews by Hileman et al. (2016) and Kuzdas et al. (2016) give good examples of the kind of issues under this discourse. Hileman et al. (2016) reiterate that many water conflicts are rather local, low intensity and often exclusively related to socio-political drivers and variables in the governance and water users’ systems. They conclude that the property rights are the major conflict

drivers and point out the inadequacy of the current concept of IWRM to incorporate such issues. Similarly, Kuzdas et al. (2016) found out that distrust, dispute legacies and ineffective participation and contested rights are leading to conflicts that need to be addressed through clear conflict mitigation and peacebuilding strategies. This paper argues that the conceptualization and incorporation of institutional water security as an integral part of water sector reforms like IWRM is the right approach to address such conflicts in a broader context.

3.2. Security, institutional harmony and ‘conflict-freeness’

Different from prevalent security concepts, the water security term is defined here as institutional water security. In this sense, it goes beyond the narrow notion of conflicts and disputes. In order to explain the contents of this term further, the discursive model of Dimitrov (2002) can be helpful. Accordingly, security models elaborate on four questions: what does security mean (security concept); where do threats come from (security threat); how does one guard against threats (security policies); and who is responsible (security institutions). Thus, security as such is the ‘comfort’ arising from the absence of the threats inherent in rivalry and conflicts (ibid.). In this sense, security is understood in this paper as the ‘institutional harmony’ among water sector organizations and as ‘peaceful cooperation’ as well as ‘interest congruence’ among relevant stakeholders. Fig. 2 gives an overview of the contents of two states of security and insecurity. This security concept does not imply the absence of conflicts, but rather that they do not produce threats that would undermine the performance of institution, or halt crucial reforms. A state of few conflicts is necessary to facilitate smooth reform implementation. Conflicts can still exist in forms of ‘latent conflicts’ like professional and normative differences among stakeholders and are thus normal or ‘tolerable’ in water governance (see Kuzdas et al., 2016). The prerequisites for such a state of ‘conflict-freeness’ or ‘low-conflict’ are measures to dam the drivers of conflicts (conflict threats). The threats manifested in a state of insecurity depicted in Fig. 2 are based on Kuzdas et al. (2016). Low credibility refers to information unreliability while social rifts and adverse legacies describe water use and management histories that can lead to inequalities, distrust and thus conflicts. Institutional misfits, overlap, and interplay elite capture are also common security threats. Many of the policy measures to promote harmony and peace in the water reform process center around mediation, arbitration, transparency and law enforcement (Fig. 1). Hileman et al. (2016) and Kuzdas et al. (2016) see a need to incorporate ‘peacebuilding’ as the right holistic approach to curb conflicts. Here, conflict management and transformation is equally important as the treatment of human interactions causing conflicts (Hileman et al., 2016). In order to achieve this, water institutions need to fulfill certain requirements like being inclusive, legitimate or just. Kuzdas et al. (2016) emphasize the role of local leaders in mitigating conflicts and learning from the successes and failures of conflict mitigation in other local case studies. Accord-

ingly, governance regimes that are highly central or locally fragmented are less able to effectively manage conflicts. In terms of ‘who’ such security institutions are, security policies can be implemented at different levels by those institutions designated to facilitate integrated policymaking and collective decision making (e.g. higher councils, regulatory agencies, ministries, basin agencies, local government, special fact-finding missions etc.). Finally, institutional security can significantly determine the failure or success of sector reforms like IWRM, but the relationship is not deterministic. Intervening variables are multiple. For example, while this paper promotes institutional security as a new pillar of IWRM, measures in other pillars like economic instruments, adequate legislation and institutional framework are important for effective reforms. Further, the overall governing context, like political economic and social conditions, as well as environmental and climate factors are important for conflicts and any institutional reforms (see Kuzdas et al., 2016). Similarly, Hileman et al. (2016) reviewed literature that illustrate the endogeneity of scarcity-conflict and socio-economy-conflict relationships.

3.3. Security as mitigation of IWRM failures

Issues this paper summons under ‘institutional harmony’ or ‘conflict-freeness’ in the sense of ‘low-conflicts’ are not considered by IWRM. IWRM assumes that its idea is convincing to all stakeholders by itself, because it is based on global consensus on ‘good’ and ‘sustainable’ water management. As is the case of the development concept, without addressing institutional security, which can be understood as the conditions for inducing the ‘harmonic consensus’ on the usefulness of sustainable management and thus IWRM as a part of the sustainability agenda, conflict can turmoil any initiated policy reforms.

The conceptualization of security and peace can mediate for IWRM's failures by putting back interests, conflicts and local realities during the reform pathway into the reform management agenda. Table 1 provides a summary of the potential contribution of incorporating security into IWRM by expanding the conceptualization in the last two sections to include more security threats and policies. Key conflict drivers related to the two main IWRM failures (see Chapter 2.1) are summarized as well as instruments to address them. While conflict drivers are already mentioned extensively, it is worthwhile to look at some remedies. Conflict prevention and mediation measures, for example, imply understanding actors' perceptions, interests and the underlying conflict reality. Measures to achieve institutional security and peace can thus help reduce complexity and design better institutional fits. Furthermore, security as a part of IWRM encourages participation because it helps translate the IWRM agenda to ‘non-ecologists stakeholders’ and contribute to a bottom-up approach of IWRM. Conceptualizations of IWRM are related to interactions and discourses between different ‘policy entrepreneurs’ in the global arena (Mukhtarov and Gerlak, 2013). Incorporating institutional conflicts and the country-specific political reality within IWRM can help leverage contextuality. Another advantage is that conflict-resolution measures mediate for the problem

of short-terminality of the project-mindset of IWRM. In order achieve institutional harmony, one would need to build a consensus first and incorporate IWRM principles programs and policies for the long-term. Instruments mentioned by Hileman et al. (2016) and Kuzdas et al. (2016) related to peacebuilding can help build such consensus. Accordingly, peacebuilding is necessary to overcome distrust-inherent conflict legacies and long-standing marginalization through reconciliation and recognition.

4. Discussion: IWRM and the sustainable development agenda – an impetus for IWRM reform

Conflict and security have not been central to the IWRM agenda. The current holistic design IWRM tends to provide universal recommendations as a way of synthesizing best practices and practical wisdoms. In doing so, it ignores local context and might lead to reform failures, superficial implementation or adverse results like resistance, conflicts and inequalities. These emerging issues are rather new to the sustainable development agenda which IWRM pursues. Since its early days, IWRM can be understood as the manifestation of the sustainability paradigm in the water sector (Biswas, 2008). The IWRM design is one to achieve the societal principles of economic efficiency, social equity and environmental sustainability by realizing three elements, one for each goal: management instruments (allocation, information and assessment instruments), enabling environment (policies, legislations based on collective decision-making) and institutional framework (decentralization, river basins and private-public participation reforms) (Jøneh-Clausen and Fugl, 2001). Thus, IWRM followed the sustainable development definition at that time based on three pillars, which was cornered by the Brundland report of 1987 and finally adopted by the Rio conference of 1992. IWRM's emphasis on sustainable development is arguably one key reason behind its popularity. IWRM has been adopted by the UN as part of its Millennium Development Goals (MDGs) and was high on the agenda of the Johannesburg Summit on Sustainable Development in 2002 (Bandaragoda and Babel, 2010). It was also a guiding concept for the European Union's Water Framework Directive.

While the normative concept of IWRM remained the same, the sustainable development idea has undergone some refinements in recent years. At the time of Rio + 20 conference in 2012 which proposed a new set of global goals, the so-called Sustainable Development Goals (SDGs), the UN System Task Team on the Post-2015 Development Agenda published a new report Realizing the Future We Want for All as a reference point for consultations that culminated in 2015 with a new goals and a modified development agenda. This report entails an outline of sustainable development based on four-pillars, including the three pillars of the current agenda expanded by ‘peace and security’. According to the report, the four-dimensions are equally important to guide the sustainability agenda for the upcoming years. Although peace and security have been a part of the previous Millennium agenda as a guiding principle, it was not addressed by specific targets nor declared

Table 1
Contribution of security in mitigating water conflict drivers.

IWRM failures	Drivers of conflict	Instruments of institutional security
Contextuality	<ul style="list-style-type: none"> • Institutional miss-fits • Institutional interplay and overlap • Sensitivity to actors plurality and developmental context 	<ul style="list-style-type: none"> • In-depth analyses of country realities • Country-specific reform roadmaps • Conflict-resolution mechanisms • Post-reform conflict mitigation • Promotion of reform philosophy and translation of the agenda
Legitimacy	<ul style="list-style-type: none"> • Participation and leadership • Representativeness • Ownership • Accountability • Transparency • Dispute legacies and marginalizations 	<ul style="list-style-type: none"> • Harmony and consensus-building measures • Bottom-up approach in reform design • Management of reform expectations • Compensations and resolutions of reform side-effects • Regulations of rights, roles and responsibilities during reforms • Reconciliation, peacebuilding and recognition

as a fourth pillar in sustainable development. Conceptions of sustainable development based on four pillars have also been put forward in last years with the fourth element including governance or cultural aspects, e.g. in the assessment of Circles of Sustainability (James et al., 2015). The demands to incorporate conflict-free development and conflict resolutions into the sustainability agenda have been partially met in the new development goals. In the final document of the SDGs adopted in September 2015, the vision of four-pillar agenda has not been adopted, while the goals of peace and security have been merged with governance goals (goal 10 of the Post-MDGs proposal) into a new goal, SDG 16 to “promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels”. In regards to peace and security, this issue figured prominently within the 2030 declaration ‘Transforming the World’: “Sustainable development cannot be realized without peace and security; and peace and security will be at risk without sustainable development.” With the new targets (e.g. reduction of violence, fighting corruption, promoting the rule of law, encouraging participation, or increasing transparency), the new agenda thus responded to recent calls of targeting the issues that lead to conflict and insecurities, especially in developing countries. As explained earlier, these issues present key challenges for the implementation of water management reforms in many developing countries. Current targets and debates of the sustainable development agenda provide a good opportunity for a IWRM design reform in order to reflect this new thinking on sustainable development and accommodate a more comprehensive and context-specific water governance. Peace and security can be incorporated within a refined design of the IWRM agenda, which can help achieve a more contextualized water management. Fig. 3 presents the new design of IWRM. IWRM as a sustainability paradigm for water management is based on our broad pillar for sustainable development with equality, human rights and inclusion as cross-cutting issues. Under each pillar, relevant good governance principles as well as correspondent IWRM issues and instruments to achieve them are listed. The first three pillars represent the current design of IWRM promoted by various donors and international organizations. The economic or efficiency pillar aims at promoting the right resource values and

economic incentives. The sustainability pillar focuses on water sharing and management policies and legislations to address eco-systems’ and developmental needs while minimizing risks. The equity pillar aims at encouraging participation through institutional capacity building and the clarification of roles and responsibilities. This paper argues for a security pillar to incorporate the issues and instruments discussed earlier.

To understand the refined IWRM design in Fig. 3, one needs to remember that sustainable water management is driven from broad societal goals which are commonly provided by good water governance principles. Good water governance and thus IWRM have reflected in the past ‘outcome-based’ principles such as efficiency (economic measures), equity (institutional reforms) or sustainability (laws, policies, plans etc.). Countries achieving these principles would have a high governance and IWRM score despite having ineffective processes or lagging behind on transparency, actual participation or fighting corruption (Lautze et al., 2011). The three dimensions of IWRM until now are eminent of this thinking. Overall, Case studies on IWRM show that IWRM implementation was selective. The focus was on institutional reforms and policies (environmental sustainability pillar) with no real improvements on finances and participation (efficiency and equity pillars). IWRM case study reviews like that of Hileman et al. (2016) show that water conflicts are also not addressed adequately by the equity pillar. Since the time IWRM was introduced, principles related to democratic or plural solution-making have gained an importance in environmental policy debates. Security is seen as an important and emerging principle to facilitate achieving other principles and mediate for failures of the whole sustainability agenda. As discussed in the last chapters, the proposed peace and security pillar of IWRM addresses key IWRM failures like the lack of incorporation of country specificity and political reality or existence of significant institutional conflicts. These failures can be directly addressed by IWRM instruments like specific agendas, peace and consensus building or conflict resolution and arbitration. Finally, the proposed refinements to IWRM are not merely esthetic improvements. Rather, they present a prioritization of issues and an alignment toward new societal principles. Here, as we have seen with the development agenda, such refinement would mean that new

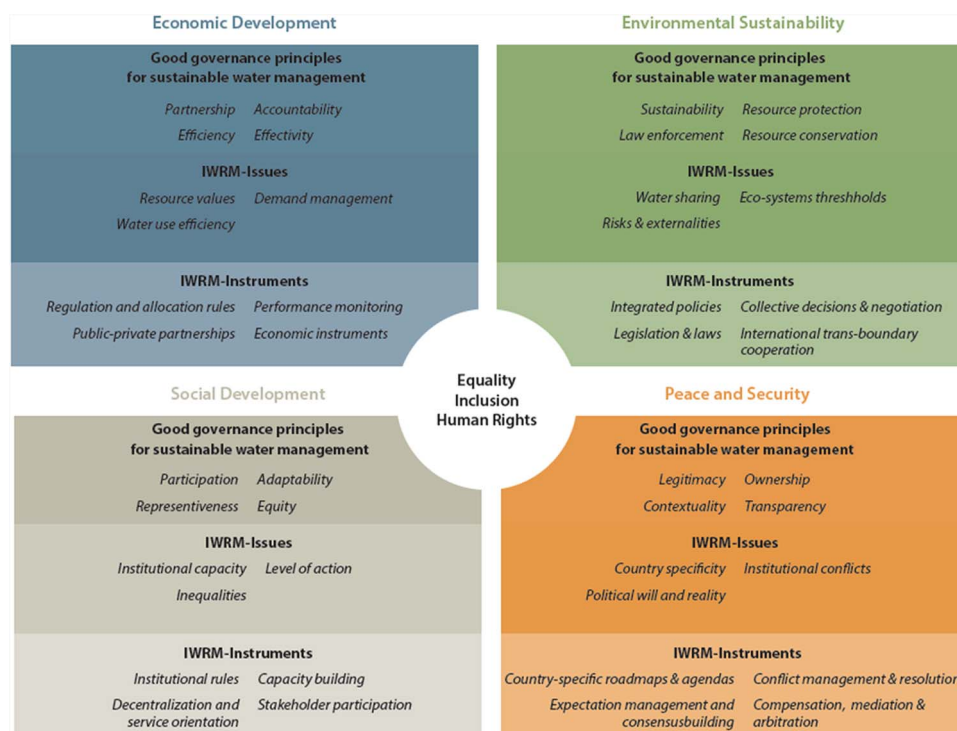


Fig. 3. IWRM as a four-pillar concept.

issues will emerge like conflicts and harmony but also older issues like participation and collective decision-making will be reevaluated. Finally, security implementation in the IWRM design would also mean integrating this idea in the policy cycle and during the implementation pathway and at different scales. Inclusion of mediation forums, conflict-resolution mechanisms, and long-term country-specific reform roadmaps based on consensus and harmony among stakeholders might be initial examples of how to do this. This way, there is a new opportunity to increase IWRM performance and also to measure and evaluate it.

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