EXPLICATING SECURITY IN TRANSBOUNDARY WATER SECURITY DEBATES: A CRITICAL APPRAISAL

https://doi.org/10.47743/jopafl-2024-33-23

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Abstract: The appropriation of the concept of water security by diverse disciplines has contributed to widening the debate on water security rather than deepening it. Hence, water security is often associated with food, health, and ecology; human, environmental, and national issues; economic development, climate change, and others. Moreover, water security is often expressed as water scarcity, as a sub-set of environmental security, and as transboundary water security issues. Nonetheless, a comprehensive understanding of water security requires a close and critical examination of the variants of water security debates. Thus, this paper comprehensively and critically reviews the notion of security in the water security debate.
Keywords: Water scarcity |Water security | Environmental security |Trans-boundary waters

Introduction

Water is a ubiquitous and renewable source of energy. Of the 70% of the world's water resources, only 3% are fresh and 1% are found in rivers and lakes (Mishra, 2023). There are approximately two hundred and sixty-three transboundary rivers (Wolf, 2007; Bhaduri, 2016). International basins cover nearly 47% of the world's land surface, affecting 40% of the world's population and accounting for approximately 60% of global river flow (Wolf, 2007; Pahl-Wosti et al., 2016). Water security is a critical global concern. The emergence of the water security concept can be traced back to the 1970s Stockholm Environmental Conference and 1987 Brundtland Report on Sustainable Development. Following the Dublin and Rio Meetings, global water security became more pronounced among the international community and development organizations. Oswald and Brauch (2009) noted that after the politicization of water at the Dublin Conference and Rio Earth Summit in the early 1990s, the "securitization of water has upgraded water issues to a policy problem" (Oswald and Brauch, 2009: 34). Three years after the inauguration of the Water Day celebration on March 22, 1993, the World Water Council and the Global Water Partnership were established. Three global water conferences have contributed immensely to the engaged global water security policy dialogue: the 2000 World Water Foundation (WWF) held in The Hague, the 2009 WWF conference held in Istanbul, and the 2012 WWF conference held in Marseille. Each conference advanced the notion of water security within the framework of environmental sustainability and the development agenda.

Although the trans-boundary water security issue is as old as humanity itself, it has not been the UN security agenda until recently. It was after five years of UNSC's "Arria-formula meeting on water, peace and security" that Egypt has also brought a case against Ethiopia before the UNSC claiming that the GERD is existential threat to Egypt and Ethiopia should not unilaterally fill the GERD without reaching on a binding agreement.

Hence, it appears that the global water security debates after the 1990s have shifted from trans-boundary hydro-politics (Tadros, 1997; Zeitoun, and Allan, 2008; Alexis, 2006; Yacob, 2007; Cascão, 2009) to the water security agenda (Fröhlich, 2012; Rahman, 2012; Nyaoro, 2016). Moreover, the notion of water security in its own right has rarely been investigated. Water security has been widely discussed from the perspectives of environmental, human, and developmental studies (Jansky et al., 2008; Bogardi et al., 2012; Oswald and Brauch, 2009). Magsig (2015) rightly suggested that "academic debate around water security is in dire need of more deliberate and extensive examination, in order to address the vagueness that currently surrounds the concept, and ultimately deepen knowledge and understanding of the contribution that a "water security paradigm" can play in addressing the global challenges (Magsig, 2015: 6). Therefore, this study takes the concept of security seriously and delves into the water security debate within the framework of neo-realist, liberal, and constructivist explanations of security-cum-water security discourse (Oswald and Brauch, 2009; Wouters et al., 2009; Briscoe, 2009; Zeitoun, 2011; Bogardi et al., 2012; Cook and Bakker, 2012; Laute & Manthrithilake, 2012). It aims to provide a comprehensive understanding of the complexities inherent in the water security debate and highlight their relevance, taking some examples from trans-boundary water security issues.

The remainder of this study is structured as follows. The second section comprehensively provides an overview of ongoing debates in the stream of water security. The third section discusses the concept of security and critically engages with the neo-realist, liberalist, and constructivist water security underpinnings vis-à-vis transboundary water security issues. The last section provides concluding remarks.

The Water Security Debates

Water security is an "emerging paradigm" (Cook and Bakker, 2012; Laute and Mathrithilake, 2012). By and large, the water (in)security debate has four domains: human development, ecological sustainability, geopolitics and international relations, and vulnerability and risk (Jepson, 2014; Cook and Bakker, 2012). Moreover, the concept of water security framing has widened in the sense that water (in)security is treated as water scarcity, as national security, human security, and environmental security (Hoff, 2011). However, water security and water risk/insecurity are not the same: where water security is explainable in in terms of water resource management (positive ideal), the notion of water risk and scarcity refers to things/dangers to be "averted or avoided" (Mason and Calow, 2012: 18). Nonetheless, water securitization stems not necessarily from immediate and imminent threats but also from discursively constructed narrations and identity formation (Gashaw and Yacob, 2025; Fana and Dawit, 2021; Turhan, 2020). At this juncture, it is important to recognize the existence of "discourse pluralism" (Pahl-Wostl et al., 2016: 13) in water security definitions, which is attributed to the diversity of disciplines, policy underpinnings, and governmental and non-governmental actors (Lautze and Manthrithilake, 2012; Sadoff and Connors, 2009; Bakker, 2012; Weissner, 2016). For example, in the legal sense, water security is framed as "security of entitlement and was bound up with rules on allocation (and re-allocation)" (Tarlock and Wouters, 2009: 54). In agriculture, it is perceived as "protection from flood and drought risk" (Smith, 2007: 74). In politics, it is framed as national water security/self-sufficiency (Pahl-Wostl et al., 2016)

or "the degree to which a state can satisfy its own water needs through internal means" (Laute and Mathrithilake, 2012: 189).

When it comes to the political sense of water security, traditionally, the discipline of security studies has mainly focused on military threats to the integrity (sovereignty) of nation states (Wheeler and Booth, 2008; Buzan, 1987; Bjørn-Oliver, 2011). Therefore, in international politics, states' strategic moves, scientific advancement, and competition for the preservation of the status quo are the most important areas of discussion (Buzan, 1987; Wheeler and Booth, 2008). However, since the end of the Cold War, the dimension of security has broadened and included factors such as societal, environmental, and human security (Tadros, 1997; Buzan and Hansen, 2009; Wouters, 2010; Magsig, 2017). The human rights approach to water also perceives water security as "freedom from want, freedom from fear, and freedom to live in human dignity" (Annan, 2005 cited in Oswald and Brauch, 2009: 27). It is also observed that the notion of water security is perceived as "the state of having secure access to water (Bjørn-Oliver, 2011: 331); "the assured freedom from poverty of, or want for, water for life" (Wouters, 2005: 168). Tarlock and Wouters (2009: 56) also noted that "Water stress is real" and yet, it is also "presented as the result of fear in water scarcity due to climate change, draughts, water resource competition and other factors." Moreover, "freshwater management at any governance level is expected to become more intense in the future, as accelerated change creates new threats and interconnected forces increase uncertainty and risk" (Magsig, 2015: 3).

Water resources, human development, and state power are inextricably linked. For instance, although the US is one of the most water-secure countries in the world, it associates water security with "terrorism" since 9/11 and "water engineers consider water security as "guns, gates and guards to ensure potable water infrastructure security" (Cook and Bakker, 2012: 26). Therefore, water security may not necessarily be associated with real water scarcity. Of course, "the characterization of water stress as a security problem has a long pedigree. Fear of inadequate water supplies (or the inability to manage excess supplies) has always generated fear. Fear of drought is eternal" (Tarlock and Wouters, 2009: 54). Furthermore, the securitization of water resources "may bring up discursive absolutes that are conceived to be 'non-negotiable, 'nationalistic feelings' (Bjørn-Oliver 2011: 329); weaponization/militarization of water (Magsig, 2011).

Water Scarcity as Water Security

Water scarcity-cum-water security is becoming increasingly prevalent in political agendas (Bjørn-Oliver, 2011). The concept of water scarcity as water security advances the "web of water security" of the climate–food–energy–human security matrix (Oswald and Brauch, 2009; Zeitoun, 2011; Cook and Bakker, 2012; Bogardi, et.al., 2016; Maganda, 2019). Water scarcity security framing leans towards water quality and quantity, and is often linked to water stress and water shortage (Falkenmark, 2007; Burleson, 2008; Lankford et al., 2013; Lautze, and Manthrithilake, 2014; Magsig, 2020); water "contamination and terrorism" or regarding water infrastructure security as "a cornerstone of homeland security" (Shermer, 2005: 359 quoted in Cook and Bakker, 2013: 56). Witter and Whiteford (1999) defined water security as "a condition where there is enough water at a quality necessary, at an affordable price, to meet both the short term and long-term needs" (Witter and Whiteford, 1999: 2). The Ministerial Declaration of The Hague (2000) reiterated water security as "that every person has access to enough safe water at an

affordable cost to lead a healthy and productive life and that the vulnerable are protected from the risks of water-related hazards." Similarly, UNDP (2006) defined water security as "that every person has reliable access to enough safe water at an affordable price to lead a healthy, dignified, and productive life' (UNDP, 2006: 3). Grey and Sadoff (2007) defined water security as "the availability of an acceptable quantity and quality of water for health, livelihoods, ecosystems and production, coupled with an acceptable level of water-related risks to people, environments and economies" (Grey and Sadoff, 2007: 545). Concomitant with Grey and Sadoff (2007), UN Water defined water security as "the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality of water for sustaining livelihoods, human well-being, and socio-economic development" (UN University, 2013: 1).

Embracing the foregoing definitions, Wouters summarized water security as a matter of "(1) meeting basic needs; (2) securing food supply; (3) protecting ecosystems; (4) sharing water resources; (5) managing risks; (6) valuing water; and (7) governing water wisely" (Wouters et.al., 2009: 103). However, the aforementioned definitions have broadened the discussion on water security rather than deepening it. Water security is framed within the context of access, availability, quality, safety, quantity, and adequacy.

Understandably, food, energy, and health cannot be secured without water, and water security is not merely a matter of physical access. Moreover, water resources are critical for 'the stability, continuity, and sustainable development of the states located in the arid realm' (Al-Otaibi and Abdel-Jawad, 2007: 305). Hence, it is not surprising that arid regions regard water security as national security (Zeitoun et al., 2013; Alexis, 2006; Tadros, 1997). Some even went further and argued that if the wars of this century were fought over oil, the wars of the next century would be fought over water (Le Prestre, 2000: 443; Homer-Dixon, 2010: 4; Shiva, 2002: ix, 2002: x).

Water security is fundamentally a political concept. The political dimension of water security extends from water governance issues, such as integrated water resource management, to the securitization of water as a 'strategic resource' to violent conflict. By and large, water security goes beyond the water scarcity issue and has a backing of water governance and insecurity discourse, which feeds securitization tendencies. In transboundary water settings, "pairing water with 'security' has taken water higher in many political agendas and implies a recognition of a geopolitical urgency" (Octavianti, 2020: 146).

Water Security as Sub-set of Environmental Security

As discussed elsewhere, the concept of water security has been significantly influenced by the emergence of environmental security (Boyer, 2020). The study of environmental security since the 1980s has mainly focused on environmental degradation rather than on the constructivist approach to water (in-)security interactions (Myers, 1993; Kaplan, 1994). Acute water scarcity, resulting from prolonged droughts, environmental degradation, and water contamination, may lead to security threats. For example, Kaplan (1994) warned the US government noting "the coming anarchy" due to environmental crisis. Water security and scarcity are linked to climate change (Zeitoun, 2011) and environmental security (Ullman, 1983, Myers, 1989). The environmental security framework has also been used to help understand water (in-)security and to analyze conflict and cooperation in relation

to common water resource utilization (Wolf, 2007; Homer-Dixon 2010). Environmental degradation-induced water scarcity 'can also be portrayed as a threat to human security' (Barbosa and Souza, 2012: 4). On the other hand, 'water scarcity could result in exacerbated relations and conflicting interests' (Uitto and Wolf, 2002: 292 cited in Barbosa and Souza, 2012: 4).

Nonetheless, the focus on human security is mainly anthropocentric and often recommended not to ignore 'the threats to environmental security, represented not only by water crises and climate change, but also by the general framework of global environmental change' (Barbosa & Souza, 2012: 4-5). Therefore, water security as a subset of environmental security has taken a comprehensive approach; it is the redefinition of security, a move from national and human security to environmental security, which promotes prevention mechanisms, adaptation, and mitigation measures (Barbosa and Souza, 2012). However, skeptics argue that "there is a danger, and a reality in some cases, that discourses of environmental (or water) security may take us back to the days when it was often asserted that climate dictates culture and character" (Staddon and Scott, 2021: 1018 citing Liverman, 2009). Moreover, others view that environmental security "serves to legitimate new areas of military deployment, [...] a means of legitimating violence" (Tarlock and Wouters, 2009: 30); "the idea of environmental security has also been expressed in the context of North-South discourse, with critics highlighting the inappropriate 'colonization of environmental problems' by security discourse" (Tarlock and Wouters, 2009: 30). In other terms, "environmental security is committed less to the security of people on the ground than to the national interests of the industrialized world" (Tarlock and Wouters, 2009: 30). Thus, some environmental security critics opt for "peace and conflict research that avoids the concept of security, in order to pre-empt political instrumentalization of the concept and to do greater justice to the complexity of environmental change" (Zeitoun, 2011: 29).

Security Theories and Transboundary Water Debates

What do we mean by Security?

Etymologically, the term security is derived from the Latin word s(in)e cura, i.e. "a state of living without care and concern" (Warner and Meissner, 2008: 254). In academia, the concept of "security" is one of the most porous and widely debated concepts (Smith, 2007). This is because it is a "borderline" concept in both social and natural sciences. It has been understood and defined by scholars, depending on their time and place in human history (Booth and Wheeler, 2008). For instance, the term security has also been perceived as being free from danger to core values (Lippmann, 1943); security is a matter of degree (Wolfers, 1952); as study of 'threat, use, control of military force (Walt, 1991: 227); as (de-)securitization (Buzan et al., 1998: 133); as an extraordinary situation call for extraordinary measures (Williams, 2003: 514); as something that "threatens drastically and over a relatively brief period of time to degrade quality of life for the inhabitants of a state or threatens significantly to narrow the range of a choices available to the government of a state [...] within state" (Ulman, 1983: 133); as "organizational stability of states, systems of government and ideologies that give them legitimacy" (Buzan, 1983: 19-20).

The narrow and traditional definition of security refers to "the preservation of nation-state integrity in the face of external threats in an anarchic world of states; the task of

guaranteeing security is seen as being ultimately a military one" (Pandey, 2009: 55). An attempt has been made to redefine and broaden the traditional understanding of the concept of security to include demographic challenges, resource scarcity, environmental crises, and economic and ecological aspects (Ullmann, 1983; Mathews, 1989; Smith, 2007; Haftendron, 1991). Thus, the broad and comprehensive definition of security moved from classical/traditional to non-traditional security studies to third world security studies (Ayoob, 1991; Chatterjee, 2003; Omeje, 2010) then the Copenhagen (Buzan et al., 1998) and later, critical securities studies emerged (Wheeler and Booth, 2008). Lippman (1943) stated that "a nation is secure to the extent that it is not in danger of having sacrifice core values, if it wishes to a void war, and is able, if challenged, to maintain them by victory in such war. (Lippman, 1943: 51). Put it differently, "efforts of security are bound to be experienced as a burden, security after all is nothing but the absence of the evil of insecurity, a negative value so to speak [...] the efforts for security by a particular nation will tend to vary, other things being equal, with the range of values for which protection is being sought." (Wolfers, 1952: 488). In its objective sense, security refers to "the absence of threats to acquired values"; in subjective sense, it refers to "the absence of fear that such values might be attacked" (Wolfers, 1952: 150). The first line of thought advances material accumulation (power, money, military, and others) as a source of security (for example, offensive realists may argue that the more power a state has, the more it will be secured). Here, security as a value refers to power (a state's capability to control the actions of others) and wealth (a state's material possession) (Wolfers, 1952).

The second line of thought advances emancipation, that is, concerned with justice and the provision of human rights. This distinction is commonly reflected in the ideas of 'freedom from' and 'freedom to' (Williams, 2008: 6). In other words, security may be understood as "the absence of something threatening" ('freedom from,' in negative terms) or the existence of enabling environment ("freedom to," in positive terms). That is, from a human security perspective, water security is based on three core freedoms of human security: freedom from want, freedom from fear, and freedom to live in human dignity, but is also related to the fourth pillar: freedom from hazard impacts" (Bogardi et al., 2016: 41). Therefore, security involves "gaining a degree of confidence about our relationships that comes through sharing certain commitments, which, in turn, provides a degree of reassurance and predictability" (Williams, 2008: 6).

As indicated above, the sources of (in)security may take material/objective and non-material/subjective lines of thought – the former being realist and the latter constructivist (Brauch, 2011: 61). Nonetheless, the notion of security should not be a matter of 'either or,' rather it encompasses both material as well as non-material dimensions – both are the continuum of one another. It must be noted that the perception of security relies on "value given by society (wertidee) and a universally applied 'normative concept' (Brauch, 2011: 61). The notion of security is partly socially constructed – the imagination of the parties regarding (in)security dynamics (Butler and Wolf, 2020). The extended notion of security, such as water security, explicates the "future uncertainty" and "inescapable insecurity trap" (Wheeler and Booth, 2008: 138).

However, some have shown that the ever-elastic concept of security 'leads to a loss of analytical clarity from a research perspective as well' (Tarlock and Wouters, 2009: 20). Critics argue that "if the concept of security is used in many different contexts, it becomes harder to identify security risks, responsibilities, and appropriate responses" (Zeitoun,

2011: 19-20). However, not every threat is considered a security issue. Buzan et al. provided a criterion for a threat to be a matter of security, and they stated that "they have to be staged as existential threats to a referent object by securitizing actor who thereby generates endorsement of emergency measures beyond rules that would otherwise bind" (Buzan et. Al., 1983: 25). In conclusion, security is indispensably political and plays an essential role in deciding "who gets what, when, and how in world politics" (Lasswell, 1936 quoted in Paul D. Williams, 2008: 1). It is "a powerful political tool in claiming attention for priority items […] helps establish a consciousness of the importance of the issues so labelled in the minds of the population at large" (Buzan, 1991: 370 quoted in Paul D. Williams, 2008: 2). Therefore, "security is something that can be constructed; insecurity is not simply the given condition of the international system. Security is what states make of it' (Smith, 2007: 87).

Realism and Neo-Realism

Stephen M. Walt (1998) in his seminal work One World, Many Theories noted that "the study of international affairs is best understood as a protracted competition between the realist, liberal and radical tradition" (Walt, 1998: 30). The realist approach to security studies focuses on state power, anarchic structure, and military threats to the Westphalian state's sovereignty and territorial integrity (Bjørn-Oliver 2011: 330). For realists, the common concern of all states, big or small, old or new is "continued existence, maintenance of its territorial integrity, survival of its governing regime, independence from control by other states, and the physical survival of its citizens" (Gambo and Kwaja, 2010: 44). The nexus between water resources as a center of economic development and its implication in the state's capability to deal with competing powers underscores the conundrum of water security discourse. In the context of realism and neo-realism, water resources and their management determine not only the domestic capability but also enhance its sphere of influence. Investment in transboundary water resources helps the state secure its water, energy, food, and other demands (Biswas, 1992). Moreover, large dams built on transboundary rivers can serve as strategic offensive/defensive instruments.

Some argue that water secure state can be maintained through investment in water infrastructures which Cook and Bakker (2012) calls it "dumb infrastructure." In this regard, an increase in water security is directly related to the number of large dams, canals, hydropower plants, and irrigation canals" under the state command (Cook and Bakker, 2012: 12). For a developing state to be water secure, it needs to massively invest in "dumb" projects. Grey and Sadoff also underscored that water security in North America came by investing "trillions of dollars in hydraulic infrastructure' (Grey and Sadoff, 2007: 552). Cook and Bakker (2012) also advised developing countries to invest heavily "in hydraulic infrastructure" (Cook & Bakker, 2012: 18).

Grey and Sadoff (2007) express the state-water security nexus as water harnessed, hampered by water, or hostage to water. Hydrology is harnessed in most industrial countries, it hampers most intermediate economies, and it holds hostage many least-developed economies (Grey and Sadoff, 2007: 560). Water-hostage countries have not yet invested in hydraulics. Hence, water hostage states experience "economic water scarcity" than "ecological water scarcity" - where the former refers to the "lack of investment in water infrastructure" and the latter refers to water scarcity resulting from an environmental (physical) change (Smakhtin et al., 2004: 65). Arsano (2007) also noted "the dilemma

between the need to develop the available water resources to overcome the debilitating poverty on the one hand, and the risk of limited institutional and financial capacity to develop these water resources on the other" (Arsano, 2007: 21). Most of the developing countries, including Ethiopia, there is economic water scarcity than physical water scarcity, and Ethiopia has remained 'water hostage' state (World Bank, 2006; Grey and Sadoff, 2007). Supporting the notion of economic water security, the 2006 Human Development Report (HDR) concluded that "the scarcity at the heart of the global water crisis is rooted in power, poverty, and inequality, not in physical availability" (UNDP, 2006: v). Thus, water security is not only a matter of physical scarcity but is also the result of political, social, and economic inequities (Mason and Calow, 2012).

On the contrary, a state may have the economic capability to invest in water resources but lack water resources due to the uneven distribution of freshwater resources. For instance, "no less than six African countries depend on water imported from outside their territories. Dowdeswell (1998) indicated that "Egypt 97 per cent; Mauritania 95 per cent; Botswana 95 per cent: Gambia 86 per cent; Sudan 77 per cent; Niger 68 per cent; and Senegal 34 per cent" rely on transboundary rivers (Dowdeswell, 1998: 14). Although investing in water creates a more water-secure state, it also leads to competition between the upper and lower riparian states. Leb and Wouters (2013) correctly noted that "The paradox between security and water security is one of the world's greatest challenges. Enhancing water security within a world of sovereign states continues to be an aspiration, complicated by compounding problems related to economic, social, and environmental interests and demands and exacerbated by uncertainties affecting all of these' (Leb, and Wouters, 2013: 41).

The history of "hydraulic civilization's" also tells us that the "control and allocation of water was the very foundation for power empire" (Jägerskog, et al, 2015: xxiii). For instance, the US Global Water Security paper even went further and highlighted that "water eventually will be used as a weapon, with more powerful upstream nations impeding or cutting downstream flow or may be used within states to put pressure on and suppress separatist elements" (Gupta et al., 2016: 128).

In this regard, the neo-realist perspective of water security in the transboundary river context features the strategic calculus of the region (Bhaduri, 2016). For instance, Turkey's actions over Euphrates, Israel over Jordan, and Ethiopia over the Nile have regional geopolitical and security implications. In the Indus Basin, Pakistan fears that India "could use water control as a weapon" and this perceived water security "have been exploited by extremists to keep up the pressure on Kashmir by claiming India is stealing water" (Fröhlich, 2012: 321). In fear of India's potential to limit the flow of the River to Pakistan, the latter stated, "Muslim dying of thirst would drink the blood of India." Water security is directly associated with state wealth, power, regime security, and development. Transboundary rivers have both geostrategic and geopolitical implications. However, an increase in water security means an increase in sacrifices of other values because an increase in water security may lead to a decrease in social or political insecurity (for example, a threat from the lower riparian states), which may lead to a water security dilemma. Wolfers (1952) rightly notes that "what a country does to bolster its own security through power can be interpreted by others, therefore, as a threat to their security' (Wolfers, 1952: 494-5).

Liberalism

Liberalists hold that states can preserve their national interests in the international arena through cooperation, laws, and diplomacy (Grey and Sadoff, 2007). It advocates that such activities provide opportunities for cooperation and mutual reciprocity rather than conflict among states. Thus, water security in the transboundary water context has increasingly moved away from unilateralism, "purely political landscape" or securitization to multilateralism to "legal domain" or securitization where co-riparian states compromise and reach on agreements. As a remedy to the rising competition and conflict between the lower and upper riparian states, the international water law provided "participation of riparian states (Art.4), equitable and reasonable utilization (Art.5), no harm doctrine (Art.7), inter-riparian cooperation, and information exchange (Art.8, 9, and 11), prior notification (Art.12), ecosystem protection (Art. 20 and 21), and dispute settlement (Art.33) (UN Convention on of International Watercourses, 1997). Thus, trans-boundary water security has been "associated with allocation rules – that seek to secure entitlements to desired quantities of water" (Cook and Karen, 2013: 55). To give legal impetus for water security, some authors have construed concepts such as hydrosolidarity (Wouters, 2000: 202; Warner and Meissner, 2008: 254; Magsig, 2019); common water security complex (Turton, 2003; Magsig, 2020); obligation of states to 'ensure water for all' (Ziganshina, 2014). Although water security has entered the domain of international water resource laws (see the Nile Cooperative Framework Agreement Art.14(b)), it has not been legally defined (Wouters et al., 2009: 134).

Advocates of liberal institutionalism argue that trans-boundary water resources are a reason for cooperation rather than a cause of war (van der Molen and Hildering, 2005; Wolf and Brooks, 2003). Although there is a link between relative water scarcity and different intensities of conflict, there are also possibilities for cooperation among states sharing one trans-boundary river (Bjørn-Oliver, 2011). Turton (2003) notes "the notion of common security, which has as its foundation common interests that, at a minimum, require a shared interest in survival' (Turton, 2003: 74–5). Therefore, "the greater the degree of hydrological interdependence" between the co-riparian states, the greater the probability of formation of Hydro-Security-Complex (HSC) – which means "a set of states that are geographically part owners and users of technically shared rivers start to consider, as a consequence, this water body to be a major national security issue" (Elhance, 1999: 151).

Nevertheless, developed states have "achieved a relative equilibrium in establishing fit-for-purpose trans-boundary institutional arrangements, including treaty regimes with co-riparian states that deal with issues of river infrastructure and the quantity and quality of water flows" (Grey and Sadoff, 2007: 562). One can also observe the Rhine Basin Commission (RBC) as a case where neo-realism and neo-liberalism ("neo-neo synthesis") seem to have guided the negotiations (Smith, 2007). For example, since the 9th century, the Rhine River has established dynamic legal and institutional infrastructure that nine European countries have utilized (Dombrowsky, 2001 cited in Grey and Sadoff, 2007). Therefore, "water security cannot be achieved at the expense of the water security of others; sustainable outcomes require reconciliation of basic needs [particularly in border areas] and access to water" (Lankford et al., 2013: 3). In a liberalist sense, water security is not a zero-sum game of geopolitical and geostrategic competition. Yevjevich (1988) argued that states may come together and enter arrangements to trade water, such as critical resources such as gold, oil, and other mineral resources. The Dublin Statement suggested that "water

has an economic value in all its competing uses and should be recognized as an economic good." One may also argue that the liberalization of water is to be taken over by the market system and will lead to where the owners of the water set the price. In this way, water could be a source of cooperation and reason for shared governance grounded in international norms and institutions. However, Tarlock and Wouters (2009) outrightly object that the commoditization of water resources for "it is ubiquitous and universal," "economically efficient to transport" and although water "has economic value, it does not trade in world markets" (Tarlock and Wouters, 2009: 276). Biswas (2009) also noted that, "unlike oil, water is a reusable resource," and thus, "using water abstraction as a proxy for water use is already significantly erroneous" (Biswas, 2009: 365). Furthermore, transboundary water resources are a common pool, a common resource, and thus cannot be a property of the upper or lower riparian state. Oswald and Brauch (2009: 37) rightly emphasized that lower riparian states need to be protected by all peoples, communities and nations" (Oswald and Brauch, 2009: 37). According to the Heckscher-Ohlin model, "if an upstream country is relatively endowed with more capital needed for manufacturing goods, while the downstream country is relatively more endowed with fertile land, [...] the upstream country will have a comparative advantage in producing the manufacturing good, while the downstream country will be better off in producing the agricultural good" (Bhaduri, 2016: 107).

Constructivism

Constructivists propound that "reality is socially constructed by the analyst who is influenced by norms, culture, the socio-political context, and the perception of the observer" (Burr, 1995). It has been argued that "it is the distribution of shared knowledge that constitutes interests, and that those who focus solely on the material base of international politics fail to see it is shared ideas which make possible the behaviors and outcomes which are claimed to be the 'tragedy' of world politics" (Booth and Wheeler 2008: 93). Arguably, constructivists "share a belief that security is a social construction; it is also seen as a site of negotiation and contestation, in which actors compete to define the identity and values of a particular group in such a way as to provide a foundation for political action" (MacDonald, 2008: 67). In this regard, language shapes and limits what we think, how we think, and, consequently, how we act (Hajer and Versteeg, 2005). There is a long history of using the word 'security,' and 'security' might be different from 'securitization,' "The words are so close to each other that they can lead to a dangerous framing of issues" (Bhaduri, 2016: 128). Securitization is grounded in constructivist thought and consists of 'securitizing actors, 'securitizing moves, referent objects, and audiences (Wæver, 2008: 582). The actor's capability to impact through his decision and the audience's response to the securitization act is an inter-subjective process (Buzan et al., 1998). Securitizing involves emphasizing "the urgency of scarcity threat to legitimize or make the adoption of measures that go beyond the normal bounds of politics acceptable to society" (Wouters, 2013: 26).

The Copenhagen School has focused on how security itself is given meaning through inter-subjective processes and (to a lesser extent) what political effects these security constructions have (Buzan et al., 1998; Buzan and Hansen, 2009). According to the constructivists, the 'subjective perception of threat(s) drives the dynamics of security' (McSweeney, 1999: 54–55). Conventional constructivists define security in opposite to

"materialist analyses by highlighting the importance of ideational factors, that is culture, beliefs, norms, ideas and identity" (Buzan and Hansen, 2009: 35). Hence, "the central concern in outlining the relationship between security and identity is to point to how national identity helps determine the content of a state's interests and therefore the way it will 'act' in global politics" (MacDonald, 2008: 62).

It is worth noting that the construction of threats has much to say about the values and interests safeguarded by actors, as well as the practices and logic associated with security. Therefore, the exploitation of the special characteristics of the securitizing speech acts of water resources has proven to be significant. The speeches suggest a concern for water security, understood as a sine qua non condition for the maintenance of political stability in these regions, as well as a precedent for the "preservation of acquired levels of civilization' (Buzan et al., 1998: 76). Clearly, the debate is not merely on water (H2O) in the material sense, but it exhibits a deeper water (in)security interaction between the lower and upper riparian states. For example, the relationship between the upper riparian and the lower riparian states in the Nile (e.g., Ethiopia and Egypt), Euphrates (e.g., Turkey and Syria), and Jordan (e.g., Israel and Palestine) have been conflicting. The draining effect of securitization has been well documented in GERD negotiations and in the Palestinian-Israeli water conflict (Gashaw, 2022). Although the Scientific Committee has indicated that the GERD has no significant harm to the lower riparian countries and hinted that it is objectively reconcilable, the issue of the water security dilemma in the ENB remained unresolved (Ostigard, 2016). Recently, Ethiopia in its strategic document entitled "The two waters prime strategy (in Amharic, Ye Hulet Abiy Wuhawoch Abiy Strategy), referring to the Blue Nile and the Red Sea, clearly stated: "due to this water, Ethiopia's security has been under threat" (in Amharic, kezih wuha yetenessa ye Itophiya dehininet Adega lay texilowal) (Institute of Foreign Affairs, 2024). On the other hand, Egypt has argued that Ethiopia should release more water from the GERD reservoir during drought times. However, the politics of catastrophe shall apply to all the Nile basin countries – as all are 'risk societies' (Beck, 1992). After all, "environmental problems are the product of patterns of human activity that require substantial rethinking and deliberation" (Wæver, 1995: 65). Tarlock and Wouters (2009) also argued that: "What is needed is revolutionary re-think of the conceptual framework for water security, where the contribution of (water) law is more dynamically considered and integrated" (Tarlock and Wouters, 2009: 280).

Moreover, the CFA's Article 14(b) reads: "not to significantly affect the water security of any other Nile Basin state"; however, Egypt and Sudan want it to be phrased as follows: "not to adversely affect the water security and current uses and rights of any other Nile Basin States" (Art. 14(b) of the CFA, 2010). Obviously, the CFA's Article 14(b) is a testament to the "constructive ambiguity" that water security offers for the Nile CFA (Dereje, 2010: 440). It also seems that the inclusion of "water security" in the CFA has "strengthened the water security discourse" (Cullet et al., 2021: 6). Nonetheless, it is apt to note that promoting transboundary water security cooperation urges legal and social scholarship to take a fresh approach "to analyze the complexities of the challenges revealed by the water security concept and develop international water law further" (Magsig, 2015: 8). Because one of the shortcomings of international water law on water security emanates from the influence of traditional realism – which "hindered cross-fertilization among relevant branches of international law that integrate water" (Cullet et al., 2021: 13; Zikos, et al., 2014: 310; Ziganshina, 2014). Thus, water security as discursive "symbolic capital"

may be defined and approached positively by the respective transboundary waters and act in a collaborative and cooperative spirit (Sinha, 2005).

Concluding Remarks

Water security is a critical global concern. This article explicated the concept of security in water security debates along with transboundary water issues. The concept of water security has been associated with food, health, and ecology, including human, environmental, and national issues; economic development; climate change; and others. However, this article discusses water scarcity as water security, a subset of environmental security, and transboundary water issues. Moreover, the study of water security in its own rights has rarely been investigated, and this study has contributed to the effort to fill this gap. It has been indicated that the concept of water (in-)security encompasses both material and non-material (constructed) dimensions, for both are the continuum of one another (Smith, 2007: 87). In the context of realism and neo-realism, investment in transboundary water resources helps the state secure its water, energy, food, and other demands (Biswas, 1992). Moreover, water security in the transboundary river context features a strategic calculus of the region (Bhaduri, 2016). In liberalist sense, water security has increasingly moved away from securitization to multilateralism to "legal domain" or de securitization. In a constructivist sense, the debate is not merely on water (H2O) in the material sense, but it exhibits the deeper water (in)security interaction between the parties.

Considering the vitality of conversing with these theoretical perspectives, this article advocated for the "cross-fertilization" of theories (Cullet et al., 2021: 13). This study argues that no single theory can fully capture the concept of water security. Therefore, it has taken the concept of security seriously and explicated it within the context of water security studies and provided a comprehensive understanding of the complexities inherent in the notion of water security and trans-boundary water settings. Hence, it has interrogated the neo-realist state-centrism, liberalists' resource coopetition and constructivist's idealism and embrace hydro-epistemic community which advance "hydro-solidarity" as state's erga omnes duty to cooperate. After all, "where nature conspired to provide common resources, there can be no ultimate independence, only mutual dependence" (Smith, 1996).

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