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Beyond barriers: the fluid roles young people adopt in water conflict and cooperation

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ABSTRACT

Most people on this planet are under the age of 35. They have been raising their voices in discussions on climate change in recent years, while this is well documented, their roles in water cooperation are not. Drawing on examples from desk research, an online survey, and action research alongside young water leaders, this article seeks to map out various ways young people engage in water conflict and cooperation. This paper contributes to literature on water leadership by recognizing the fluid and adaptive roles of young people in water conflict and cooperation.

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Introduction

The world is now home to the largest proportion of young people in recent history, with more than 55% of the global population being younger than 35. The definition of a 'youth' varies across projects, policies and research (Bennett et al., 2003). For the purpose of this article, we define 'youth' or 'young people' to be 18 to 35 years of age. By doing so, we acknowledge the social, economic, and political marginalization faced by a large portion of this generation.

There are often problematic generalizations that homogenize this diverse generation as a perpetrator or heroic victim (Drummond-Mundal & Cave, 2007). Young people have been depicted as protagonists of protests, and seen as a threat to the status quo, especially in economic downturns (Huntington, 1996). They are also often ascribed with the potential to change the future. Both of these views can clearly be identified in the critique and praise for the work of young activists such as Greta Thunberg and Autumn Peltier. Furthermore, 'youth' cannot be associated with one particular political position or policy preference (Thew et al., 2020).

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These dichotomies can also be seen in the United Nations (UN), whose members have called upon states to recognize youth as positive actors that can participate meaningfully in peace processes (UN Resolution 2250, 2015; UN Resolution 2419, 2018a). This brings into one category a tremendous diversity of people, with different experiences, opportunities, capacities, responsibilities and world views. In reality, contextual and individual differences motivate, or force, young people to apply different strategies, to achieve goals that may or may not align with the objectives of institutional actors engaging with youth (Wehn et al., 2018). By making the contextual and individual differences visible, we create an opportunity to learn from young water leaders, focusing on those who work within the context of transboundary waters.

These learnings are relevant for the work of the UN and its members on fostering the roles of young people as positive actors in peace and security (UN, 2020). It is also relevant for the water sector in situations of conflict and cooperation over water. Due to growing economies, populations and climate change, water access is becoming a wicked problem. When less water is available, decisions of who gets what, when and how become more contested and subject to existing power structures. It is in these situations that leadership is needed; defined here as the process of influence that provides a sense of direction, alignment and commitment to collective success (Drath et al., 2008; Ernst & Chrobot-Mason, 2011; Taylor et al., 2015).

Adding to the growing body of knowledge on water leadership, we highlight young people who aim at influencing the management of water in highly contested situations – be it in formal or informal capacities. We feel this is relevant, as inclusion of young people in processes around conflict and cooperation in general, and over shared waters in particular, is more and more recognized (Wehn et al., 2018). Diplomacy acknowledges the roles of non-state actors in fostering state relations, such as financiers, religious leaders or entities who connect across borders. Transnational social movement organizations and non-governmental organizations (NGOs) no longer operate on the margins of the international system and have become active non-state actors in diplomacy (Langhorne, 2005). Over the past few years, more has been written about the different ways young people seek to exert influence in the field of (transboundary) water conflict and cooperation (Acosta et al., 2020; Barseghyan & Vesnovskii, 2021; Sundman et al., 2021). These engagements are oftentimes government-led and call for a deeper understanding of the alternative ways young people exert their agency.

While substantial progress has been made in investigating the role of young people in general conflict resolution (Ofem & Ajayi, 2008; UN Resolution 2250, 2015; UN Resolution 2419, 2018; United Nations Major Group for Children and Youth (UNMGCY), 2019; UN, 2020) the topic lacks crucial attention within the water sector. To fill this gap, this paper explores the roles that young people play and identifies common barriers and opportunities for their involvement in water cooperation – including at the transboundary level. The following questions guide this research: What roles do young people play in environmental peace-building and water cooperation? What barriers do young people face when engaging in the water conflict and cooperation dynamic? The findings can be used in creating enabling environments, reflecting on leadership strategies and identifying areas of further study.

The article begins with a review of the literature on environmental peace-building and leadership in the water sector more broadly, with descriptions of case studies that demonstrate the role of young people in water cooperation. We continue by presenting our methodological framework and apply this to the empirical data collected explaining how the roles were developed. In the discussion we relate our findings to the existing literature on stakeholder involvement in water cooperation and leadership in the water sector.

The article is written by a group of young people, all connected to youth organizations active on water issues. Their experiences and engagements in local as well as high-level efforts to change water policies over the past decade have shaped and informed the roles presented in this paper.

Youth, conflict and cooperation in water

This paper touches briefly on environmental peace-building strategies and activities, from dialogue to development, while retaining a focus on the agency of young people in the dynamics of water cooperation and conflict. This literature review provides necessary context to the analysis on the roles of young people in transboundary water conflict and cooperation. Furthermore, the analysis clearly shows that little research exists on the roles of young people and identifies the research gap that we aim to address.

Environmental peace-building, defined by Ide (2019) as all forms of cooperation on environmental issues between distinct groups that seek to foster more peaceful relations between them, is the umbrella under which we explore water interactions. An intersectional assessment of environmental peace-building reveals the need for inclusive and integrated water management, as such action could reduce inequalities (Septon et al., 2019). While this paper emphasizes cooperation, we note that water cooperation and conflict coexist in multilayered water interactions related to expanding industrial needs, growing populations, unbounded climate change and pollution, and rival uses in energy and agriculture (Zeitoun & Mirumachi, 2008; Sojamo, 2008).

In the literature on conflict, youth are oftentimes introduced as a risk. Much of the literature that considers the 'youth bulge', situations where a large part of the population consists of young people, takes a security perspective that is weighted towards minimizing their destabilizing potential (Fuller, 1995). However, conflict is far more complex than simply ascribing it to demographic factors. When considering the relations between youth bulges and conflict, Urdal (2011) finds that other factors such as opportunity for education, employment and participation in governance determine the likelihood of young people, especially those with few economic opportunities contributing to conflict or economic development. In contrast to the youth bulge literature, we add that young people acting as a mass generational consciousness, be they millennials or Generation Z, would require both motive and opportunity to spur a violent conflict. Contrary to alarmist writing, their leadership can be and has been expressed in generative ways such as water cooperation.

The exclusion of young people from peace processes or the lack of avenues to engage them in non-violent political and social action reduces their agency in conflict transformation and peace-building (Drummond-Mundal & Cave, 2007). Young people are

increasingly recognized to have demonstrated their leadership in preventing violence, post-conflict peace-building, sustaining peace as well as building resilience in humanitarian contexts (UNMGCY, 2019; UN, 2020).

In response to youth marginalization, the UN launched its System-wide Action Plan for Youth (Youth-SWAP) in 2012 – a global survey to identify priorities for development amongst young people – receiving inputs from 186 countries (UN, 2018b). While far-reaching and including examples of environmental programmes to enable youth action on climate change mitigation and adaptation, the study lacked a dedicated water dimension. The analysis of Youth-SWAP revealed the positive role of young people in sustaining peace, but also a reciprocal mistrust between young people and institutions and governance systems (Simpson, 2018). As the UN works to implement its resolution through these institutions and governance systems, it is worthwhile to look bottom-up at the roles and strategies young people develop and apply to unleash their full potential to create peace and prosperity.

Interlinkages between youth, water scarcity and conflict have been investigated by Miletto et al. (2017) and Ajarma (2019). Theophilus (2017) describes the severe effects on income-generating activities for youth caused by water scarcity and the disappearance of water-dependent jobs. Those negative external effects on health, education and economic opportunities constitute mostly indirect societal losses. Ajarma (2019) finds that young people are an important agent of change in water cooperation in the Mediterranean, yet their contributions are limited because of financial constraints, inadequate access to decision-making, and restricted mobility caused by difficulties in obtaining visas and a lack of transboundary platforms to exchange with one another. Young people have the potential to contribute to socio-economic development and water cooperative processes through will and determination. However, an enabling environment is found to be of utmost importance to bolster formal and informal youth involvement (Wehn et al., 2018). In diplomacy, Sundman et al. (2021) call for the inclusion of young people not as recipients, but as co-creators of cooperation, as well as for more research on how young people contribute in this specific context. Beyond being treated as passive beneficiaries, the authors recognize the independent agency young people possess to choose how they navigate highly politicized and securitized environments in the water governance arena.

Methodology

We build on the literature on water leadership to explore the different roles young people play in environmental peace-building through water cooperation, as well as the barriers they face in engaging with water conflict and cooperation. We focus on situations where young people engage with government actors, in particular in situations of transboundary water conflict. This enables us to contribute to the ongoing work of the UN and its members to acknowledge and facilitate contributions of young people to peace and security (UN, 2020).

It is acknowledged that leadership does not only include executive leadership. Three shifts have been made that include a broad range of leadership types, including recognizing that leaders connect across borders (including physical, disciplinary, hierarchies),

that leadership can happen through groups, and that personal leadership is a crucial for being an effective leader – which requires a high self-awareness and continued learning (Lincklaen Arriëns & Wehn de Montalvo, 2013). The focus on group and personal leadership allows one to see a much wider group of leaders, but also requires a different approach to fostering leadership.

Taylor et al. (2015) propose six leadership roles that ‘are potentially relevant to emerging, non-executive water leaders in developing and developed countries’ (p. 11). These are described in [Table 2](#) and compared with the roles the authors’ initially developed grounded theory approach. Taylor et al. (2015) use their typology to identify key competences for each role and develop learning programmes that fit certain leadership styles best. They emphasize how different contexts can call for similar leadership types to apply very different strategies to produce a positive outcome. We use this opportunity to reflect whether the suggested by Taylor et al. hold up when focusing on group and personal leadership, especially for groups and individuals that are marginalized or excluded.

Data were collected in three different ways. Desk research was done to identify various projects by and for young people in water cooperation ([Table 1](#)); an online survey was developed and shared to collect information on cases where young people act in the context of water cooperation and to identify barriers to their participation. The survey was distributed through social media channels (Facebook and Twitter), as well as targeted emails to academic and institutional networks in 2018. Lastly, a workshop using action research and research-creation methods was followed by in-depth interviews. A grounded theory approach, of applying constant comparative methods between data, codes and categories to discover patterns and construct theory, was used to identify and refine the roles (Charmaz, 2014). This means that the authors’ own expertise combined with these data was applied to identify trends in the behaviours and strategies adopted by the diverse group of young people who contribute to engagements over water conflict and cooperation. We labelled the trends as roles, and use these to build on, and contribute to, the literature on leadership in the water sector to show the diversity of strategies and roles of young people. The multiple case-study analysis served to inform how young people engage with, and criteria for how they can be supported in, the maintenance and promotion of peace over shared water resources.

In 2017, the authors conducted a literature review systematically scanning existing programmes and policies for the mention of young people in transboundary water cooperation, conflict and diplomacy. Using these case studies, and applying grounded theory, an initial set of roles and criteria for youth engagement in water diplomacy were identified. The initial patterns that emerged were verified by an online survey conducted in 2018. These were further refined in discussion with workshop participants in 2019, based on their personal experiences. This copies the approach taken by Taylor et al. (2015). As a final step, we compared the outcomes from our grounded analysis with the six leadership roles identified by Taylor et al. (2015). We reflect on the similarities and identify additional leadership capabilities demonstrated by young people. [Table 2](#) presents the outcome of this analysis with the bolded titles representing distinct roles.



Table 1. Sample of case studies of youth engagement in water cooperation.

Project	Description	Status	Organizer
The Role of Young People in Preventing Violent Extremism in the Lake Chad Basin (2017) – Study of Youth & Extremism	Countering drought and climate change as causal factors behind youth recruitment among pastoralists groups. As ethnic Arab Shuas, Kotokos and Fulanis on both sides of the borders, and their families, are driven by resource scarcity to migrate projects which provide for livelihoods aid prevention	Ended	Civil Society Platform for Peacebuilding and Statebuilding (CSPPS), Youth Peace & Security, The Centre for Sustainable Development and Education in Africa (CSDEA), Cordaid
Water Diplomacy Training 2017 for Young Professionals	This training provided cross-sectoral water diplomacy skills to young professionals aged 25–35, including journalists and academics, working in water and sustainability from the Middle East and North Africa (MENA) and Europe, and ultimately aimed to form a network of water diplomats from the MENA region and Europe. Connections were made, and a joint article was written. Participants connected through a WhatsApp group and can call upon each other when needed. An active network did not materialize	Ended	University of Twente, Swedish Institute Alexandria (SwedAlex) and Fanack
Mediterranean Water Heroes Contest and 2019 and 2020 call for papers	The Centre for Mediterranean Integration's (CMI) activities seek to replicate the actions, technological innovations and ideas of young people in the Mediterranean in order to create a more secure regional water future, with a focus on the Maghreb and the Mashreq. Water represents a valuable economic opportunity with the potential to create numerous green jobs in the region. The CMI-facilitated Mediterranean Youth for Water Network (MedYWat) invites selected water heroes contest applicants to join MedYWat and contribute to the network. MedYWat gathers young water professionals, activists and researchers from around the Mediterranean to give more voice to youth in shaping and implementing the Mediterranean water agenda	Annual since 2017	The CMI is a multi-partner platform where development agencies, governments, local authorities and civil society from around the Mediterranean convene in order to exchange knowledge, discuss public policies and identify the solutions needed to address key challenges facing the Mediterranean region

(Continued)

Table 1. (Continued).

Project	Description	Status	Organizer
The Universities' Partnership for Transboundary Waters	The Universities' Partnership for Transboundary Waters was an international consortium of water expertise, including several institutions spanning five continents. They sought to promote a global water governance culture that incorporates peace, environmental protection and human security via teaching, outreach and research. It provided an opportunity for young academics to connect across continents and generations	Ended	The University of Zimbabwe, University of Pretoria, Asian Institute of Technology, Yunnan University, Linköping University, University of Dundee, Universidad Nacional de Litoral de Argentina, Universidad Nacional de Costa Rica, Oregon State University and University of New Mexico
Ame o Tucunduba	Ame o Tucunduba raises awareness about the issues of the Rio Tucunduba, provides basic information about urban river concepts, river sanitation and rehabilitation, and aims to empower citizens to create a sustainable urban watershed for the future. The project is focused on Brazil, but connects municipalities to discuss their own rules, regulations, vision and issues relating to shared water resources between Brazil and neighbouring countries	n.d.	Youth led: Ame O Tucunduba
Sudanese Youth Parliament for Water (SYPW)	A national youth network acting for water around Sudan aims to ensure that young people take local action in their communities and team up for shared innovations and solutions. It is made up of students and young professionals working across disciplines to dialogue with all local stakeholders and promote their inclusion in decision-making processes and to facilitate the adoption of youth friendly policies at all levels. It is a national chapter linked to the World Youth Parliament for Water (WYPW). The SYPW has over 70 partners in Sudan with a variation of partnerships in Khartoum, El-Gezira, River Nile, Red Sea Northern, Blue Nile, White Nile, Aqdarif, Kassala, Sennar, Kordofan and Darfur states	Ongoing in Sudan and the Nile Basin	Partners vary depending on region and include international non-governmental organizations (NGOs) (e.g., United Nations agencies); local NGOs; national universities; national research institutions; government authorities (e.g., Ministry of Water Resources, Ministry of Health, Ministry of Youth and Sport); industry (e.g., Aksad and Newtech); the media; and some embassies

(Continued)

Table 1. (Continued).

Project	Description	Status	Organizer
Scheldt Youth Parliament for Water (SYP)	The parliament targets young people aged 16-30 from the International Scheldt River Basin. The SYP has had a fully fledged observer status at the International Scheldt Commission since 2012. A delegation from the SYP attends the annual plenary session of the International Scheldt Commission in December where the delegates enter a dialogue with those responsible for policy in the five regions of the three countries. Furthermore, their goal is to raise awareness amongst (young) citizens of the Scheldt basin about the importance and the quality of the Scheldt River	Ongoing in the Scheldt Basin in France, Belgium and the Netherlands	Artois-Picardie Water Agency and GoodPlanet Belgium
Central Asian Youth for Water (CAY4W)	Regional platform for networking and empowerment established as a chapter of the WYPW to support youth initiatives and promote youth inclusion in water-related activities at both national and regional levels. Since 2017, young people have been invited to participate in river basin councils	Ongoing in the Aral Sea Basin	German-Kazakh University (GKU); International Secretariat for Water (ISW); and Blue Peace Central Asia initiative of the Swiss Agency for Development and Cooperation (SDC)
Water Youth Network (WYN)	Established in 2012 as a general network by and for young people to 'Inform, Engage and Empower' young people around the world. The organization helps young people to engage in local, regional and global management of water. One of the themes is transboundary water cooperation. The organization engages in global platforms, including the UN Major Group of Children and Youth	Ongoing, global	Organized by and for young volunteers. The network is a listed foundation in the Netherlands. Funds are raised to cover costs for the website, special projects or to facilitate meetings
Mediterranean Youth for Water Network (MedYWat)	Established in 2017 as a network of young water professionals from across the Mediterranean region, engaged to create and share knowledge, build capacities and ultimately amplify youth's voices (Pedro et al., 2018). The network encompasses over 192 young Mediterranean water researchers, entrepreneurs and activists working to develop an integrated knowledge model and solutions for regional water challenges. Members collaborate on research calls; academic exchanges; online communication and capacity-building; institutional collaborations; and the creation of an entrepreneurship programme	Ongoing in the region	Supported and facilitated by the CMI. Operations from Marseille, France

Table 2. Process of refining youth roles in water cooperation and conflict

Initial youth roles	Youth roles refined during the workshop	Water leadership roles ^a
'Disruptor'	The advocate/lobbyist engaged in high-level panels, municipal government or regional committees to influence policy using capacity-building and networks, such as youth parliaments	Champion leader who initiates change through lobbying or advocacy
'Provider'	The wellbeing leader provides support to persevere such as a spiritual leader, volunteer or social worker providing trauma recovery. Their influence is mainly in the immediate community but can also be at a larger scale The provider/entrepreneur develops solutions through formal or informal markets; or mobilizes resources. They are local but can scale	
'Connector'	The connector/weaver operates at all scales to unite people, disciplines and skills using civic engagement, online platforms or networking events, such as the 'Blue Drinks' informal discussion evenings organized by young people in Canada, the Netherlands and around the world to reflect on different aspects of water management	Enabling leader who helps others to collectively learn by creating communities of practices or cooperative research programmes. Cross-boundary team leader who seeks interdisciplinary or cross-organizational cooperation
	The researcher/visionary aims for local and regional effects by articulating frames of possibility to remind everyone of the bigger picture. They help the system see itself and propose preferable futures by describing mental models	Thought leader who brings in high levels of credibility and technological expertise Strategic leader who works with stakeholders to build a shared vision and strategy for its implementation
'Amplifier'	Social media use blurs the scale of the amplifier/storyteller who makes use of various digital (webinars, television shows, vlogs) and analogue (in person, print, art) media to connect narratives between formal and informal media, such as journalists, influencers promoting hand-washing programmes at schools	Trusted advisor who is a credible agent shifting the political system through communication, networking and advocacy

Source: ^aTaylor et al. (2015).

On the basis of the survey responses, and through academic networking, invitations were shared to a select group of youth actively engaged in transboundary water cooperation to attend the Youth in Water Diplomacy: Transboundary Water Cooperation Workshop in Cairo, Egypt, on 24–28 June 2019. The workshop was co-organized under the auspices of the Water Youth Network (WYN) and the Nile Basin Capacity Building Network (NBCBN) financed by the IHE Delft Water and Development Partnership Programme (DUPC) funded by the DGIS, the development cooperation agency of the Dutch Ministry of Foreign Affairs. Attendees were selected from respondents according to age criteria (below the age of 35) and their involvement in transboundary water cooperation. The workshop provided an interactive lab in which to actively test the initial results and refine assumptions about the roles of young people in water diplomacy. The workshop was an open space for 20 young water journalists, scientists and leaders in water diplomacy from 14 different countries, who initiated or managed youth-led organizations, to co-produce knowledge, share experiences, and identify hurdles and best practices for young people. Using visual methods such as graphic visualization and video, the participants shared their experiences of engaging in transboundary water cooperation.

We used action research to guide this process. It broadly entails the collaborative interaction between the researcher and members to diagnose the problem and develop a solution based on the diagnosis (Bryman, 2012). Participatory action research, in particular, was selected because it offered a cooperative learning process designed to be: interdisciplinary (involving social scientists, engineers and journalists); international (representing geographically varied watersheds); and co-creative (engaging in joint foresight and solution-building activities). Participants engaged with the outcomes of the survey to identify more narrowly the particular roles that young people play in water conflict and cooperation; and the barriers and opportunities young people navigate, including institutional constraints, based on their own experiences.

To answer the second research question pertaining to barriers faced by young people, we build on the outcomes of the survey, as well as discussions on these outcomes with participants in the workshop in 2019. We employed the method of appreciative enquiry developed by Hammond (1996) for facilitating a participatory dialogue with all workshop participants on the input provided by 109 people. The outcomes are depicted in [Tables 2 and 3](#). A multiple-case study analysis further refined the criteria for assessing the success of youth-oriented water cooperation initiatives.

Table 3. Barriers and opportunities for young people in water cooperation

Barriers	Opportunities
<ul style="list-style-type: none"> ● Group specific: <ul style="list-style-type: none"> ○ Stigma due to last name, cultural or religious background ○ Labelled aggressive or conflict averse ○ Difference in ways of speaking and ways of listening ○ Visa requirements ○ Language barriers ○ Local experts with little opportunity to present work outside of their region ● Exclusion from decision-making ● Limited freedom of speech; censorship ● Co-opted engagement for political benefit without environmental and justice-oriented impacts ● Levels of literacy or education varied; or capacity development is lacking ● Credibility of youth questioned; benefits of youth engagement are unclear ● Lack of formal or defined roles ● Lack of funding ● Lack of government support or partner agencies; or restrictive laws and policies ● Risks: <ul style="list-style-type: none"> ○ Career risks for speaking out ○ Journalists received death threats ○ Unsafe context and blocked aid ○ Administrative barriers, registration requires background checks ● Geographical scope of international donors, e.g., bilateral schemes versus regional strategies ● Institutional disconnect from bioregions ● Administrative barriers to organizing ● Civic organizations securitized; challenge registering depending on framing, e.g., 'peace' or 'parliament' 	<ul style="list-style-type: none"> ● Making and stepping into leadership positions, e.g., provide examples that inspire, leverage skills, possess courage to speak ● Youth parliaments for water ● Inclusive spaces that facilitate young people to meet at a national, basin, regional or global level, e.g., capacity-building and networking events for all youth (up- and downstream; ethnically mixed; gender inclusive) ● Small actions at the appropriate scale; action in relation to frames of possibility ● Employment opportunities <ul style="list-style-type: none"> ○ Work for organizations that allow for freedom ○ Leave for work abroad (brain drain) ● International recognition provides security and amplifies the voice of youth ● Capacity-building programmes and trainings ● Adequate funding ● Government agencies dedicated to youth, peace and security initiatives <ul style="list-style-type: none"> ○ Inclusion of youth in formal decision-making processes ○ Inclusion of youth in government policies and programmes ● Mentorship from peers or senior professionals employed or retired from the field of interest

Results

Table 1 offers an initial look at the enabling environment and lists concluded projects for youth engagement in transboundary waters or where water crosses intrastate boundaries. The list provides an initial and much-needed overview of youth initiatives, as is emphasized by Sundman et al. (2021), but is by no means an exhaustive list of all grassroots, non-profit or state-sponsored interventions for young people to engage in fostering water cooperation.

The 2018 survey collected 106 responses from students, researchers and practitioners engaged in water conflict and cooperation from over 45 countries, including Azerbaijan, Brazil, Burkina Faso, Cameroon, Canada, Congo, Egypt, Ethiopia, India, Jordan, Kenya, Latvia, Nepal, the Netherlands, Pakistan, Philippines, South Sudan, Sudan and Uganda. The majority of responses (61%) came from individuals between 25 and 34 years of age. A total of 51% of the individuals surveyed were employed, and 23% were students or doctoral candidates; the respondents in employment represented institutions such as the United Nations Economic Commission for Europe (UNECE) Water Convention, the International Joint Commission (IJC) between Canada and the United States, Global Water Partnership regional offices, non-profit organizations, and research institutions.

Whereas 97% of responses found that young people had some knowledge or involvement in managing transboundary water conflict, few provided cases where young people were directly engaged in transboundary water cooperation and management. The shortage of examples may be because the majority of the responses came from researchers and those within academia or individuals who had participated in one-time initiatives. Or perhaps young people with a post-secondary degree who work towards water cooperation might not identify themselves as 'youth'. It is also possible that there are simply a very small number of examples of young people engaged in transboundary water cooperation and conflict prevention who are readily available, or third, that young people simply are not 'seen' or recognized as actors who play a role.

Refining the role of young people: a mapping device of change-makers

Young people are actors with choice. Economic, social and environmental factors influencing youth extremism can be countered with institutional approaches that uphold social and political justice, improve governance, and increase access to opportunities. Following the desk study, the roles of 'provider', 'disruptor', 'connector' and 'amplifier' were proposed to show that young people are not a homogenous group and, as actors, they respond to their environments in varying ways that reflect their age range, education and work experiences, responsibilities, motivations and diversity of worldviews. This corresponds to the findings of Taylor et al. (2015) that water leaders may apply similar strategies anticipating 'windows of opportunity' but will work within appropriate cultural norms and political contexts in order to shift water policies.

The authors' own 2018 survey established a baseline for the quality of interventions and the roles played by young people in fostering water cooperation. Over 40% of responses identified the following interventions as effective (rated 4 and above on a five-point ranked scale, with 1 being least and 5 being most effective): (1) media initiatives; (2) peace ambassadors/youth parliamentarians; and (3) soft skills and

leadership training. Responses indicated that a young person can shift roles and represent multiple roles at the same time. Through subsequent discussion during the workshop and amongst the authors it was clear that a greater degree of roles are strategically applied, at time concurrently, according to the context.

Based on a grounded analysis through the literature, the 2018 survey and the personal experiences shared in the workshop in 2019, we identified the following sub-roles as depicted in [Figure 1](#).

[Table 2](#) depicts the comparison of the roles of youth identified through the grounded process, with the six leadership roles identified by Taylor et al. (2015). We see that two very distinct analyses have provided very similar results. In the process of integrating the roles that emerged through our research process with the six leadership roles, we kept the name for the roles as proposed by Taylor et al. 2015. Where two roles were matched with one, the singular description be it ours or Taylor et al.'s was cleaved to allow for greater distinction.

In the process of comparing the frameworks we found that the original 'disruptor' has the same transformational leadership behaviours as the champion leader. Both employ personal credibility and charisma in their strategies to pilot new ideas or respond to political contexts. Where we had proposed the role of 'connector' we found that the 'cross-boundary team leader' and the 'enabling leader' both support spaces of peer-to-peer learning but in nuanced ways. However, there were no leadership capacities proposed for those who organize and mobilize resources in the manner of an entrepreneur. Nor was there a recognition of psycho-social supports. The caregiver role tends to be gendered and rarely described or recognized as leadership. Yet, to avoid burnout, especially if you are working to influence



Figure 1. Roles of young change-makers as developed by the authors.

policies from outside formal structures, the way you take care of yourself and others is important. As a result, we propose to modify the water leadership framework by adding the roles of 'well-being leader' and 'provider/entrepreneur'.

The other difference between the roles proposed by Taylor et al. (2015) is that the 'thought leader' is described as having technical expertise, whereas our 'researcher' introduces innovative approaches that include different frames of reference. This might speak to the difference between qualitative and quantitative training in water resources management. Another complication is that the 'strategic leader' is positioned as an experienced water practitioner with significant authority. While young people may not have authority, the future is not written and young people in the role of 'researcher/visionary' can and have facilitated spaces for building a shared vision. By gathering to articulate their own vision, young people can inspire and mobilize one another to change their behaviours in favour of more favourable water cooperation outcomes.

Lastly, the 'trusted advisor' and 'amplifier' are different in that the former has prior influence as an experienced academic or former water utility executive, whereas the latter might not have the same profile but rather an ability to mobilize knowledge and tell stories that can influence political will. Both have strong science communication skills and can maintain credibility with all sides, however the 'amplifier' can tend to champion specific causes.

Barriers and opportunities to young peoples' engagement

As part one of the first large-scale identification of the roles of young people in transboundary conflict and cooperation over water, we find it important to identify what barriers and opportunities exist for young people to fulfil their potential. This initiative directly links to the call and efforts of the UN to acknowledge and include young people as positive contributors to peace.

An initial list of barriers and enabling opportunities for youth engagement in trans-boundary water cooperation was identified during the 2018 survey and was further refined during the 2019 Cairo workshop (Table 3). The action research yielded anecdotal evidence that can serve as a basis for exploring barriers and opportunities to young people's engagement in water conflict and cooperation. An attempt was made to include a representative demographic in conducting the survey and the workshop.

Reviewing case studies

Case studies were invited through an open call, while the selection of cases may represent the limits of English-language operation, the networks tapped into and does exclude those with limited access to the internet. A wide net was cast to identify initiatives from around the globe that would serve as a baseline of youth engagement in water cooperation. The cases presented in Table 1 include the Sudanese Youth Parliament for Water (SYPW), Scheldt Youth Parliament for Water (SYP), Central Asian Youth for Water (CAY4W), Water Youth Network (WYN) and Mediterranean Youth for Water Network

(MedYWat). The political attention and subsequent financial resources and programming directed towards water diplomacy among European governments might indicate a slight bias towards the geographies identified. The Netherlands, Switzerland and Sweden are notable for their technical and governance knowledge and public funds allocated to water (including transboundary) issues. An additional consideration is the foreign policy interest countries have in particular regions, whether reputational, strategic or trade related. The organizers and facilitators of the project have therefore been explicitly named.

A few of the case studies have common organizing partners. The World Youth Parliament for Water (WYPW) operates through its national and regional chapters, two of which are the SYPW and CAY4W. The WYPW in general and activities of some of its chapters are supported by the Blue Peace initiative of Switzerland. Blue Peace provides financial and expert support to youth-led initiatives emerging in trans-boundary basins, as in the case with the youth from Central Asia. The overlaps and financial networks that support these projects will be further explored under the analysis of financial inputs.

The case studies in [Table 1](#) were analysed according to the roles played and the strategies employed to engage youth in water cooperation. The resulting criteria for meaningful youth engagement is presented in [Table 4](#): (1) financial input, (2) social and cultural acceptance, (3) sustainable institutional support and inclusion, (4) community connection and mobilization, (5) capacity and skills development, and (6) security.

Table 4. Criteria for the engagement of young people in water cooperation

Criteria	Indicator
Financial input	<ul style="list-style-type: none"> • Adequate funding for young people to self-organize
Social and cultural acceptance	<ul style="list-style-type: none"> • Absence of stigma about the role of young people (especially conflict-affected communities) • Acknowledgement of expertise and capacity of youth (e.g., benefits of inclusion to economy, society and environment are clear) • Opportunities for diverse ethnic, gender or geographical perspectives and stakeholders
Sustainable institutional support and inclusion	<ul style="list-style-type: none"> • Engagement of young people in decision-making/strategies • Youth inclusion at all levels – from local initiatives to high-level political processes • Youth involvement in transboundary water-related issues • Enabling policies and legislation • Dedicated government support: officials are not replaced frequently without ensured continuity for youth programmes/inter-agency coordination for youth, peace and security
Community connection and mobilization	<ul style="list-style-type: none"> • Coordination among youth initiatives, groups and networks • Continuity between generations • Promotion of events, campaigns and forums • Mechanisms for cross-cutting information exchange
Capacity and skills development	<ul style="list-style-type: none"> • Knowledge and experience of participants • Existing training and capacity-building programmes
Security	<ul style="list-style-type: none"> • Absence of security risks during implementation of programmes • Programmes to mitigate against climate induced migration

Analysing youth groups based on the roles identified

Leadership develops through groups (Lincklaen Arriëns & Wehn de Montalvo, 2013). Especially for young people, oftentimes present at the margins of political processes, the group provides an important platform. Little research was done on youth groups active in water cooperation and conflict and, in response, a call was made to identify these groups (Sundman et al., 2021). We contribute to this call by identifying active and non-active youth groups as depicted in [Table 1](#), and analyse prominent groups according to the leadership roles to promote learning from and between them in [Figure 2](#). Viewed this way, the scale of influence and roles can be analysed and common patterns of engagement found.

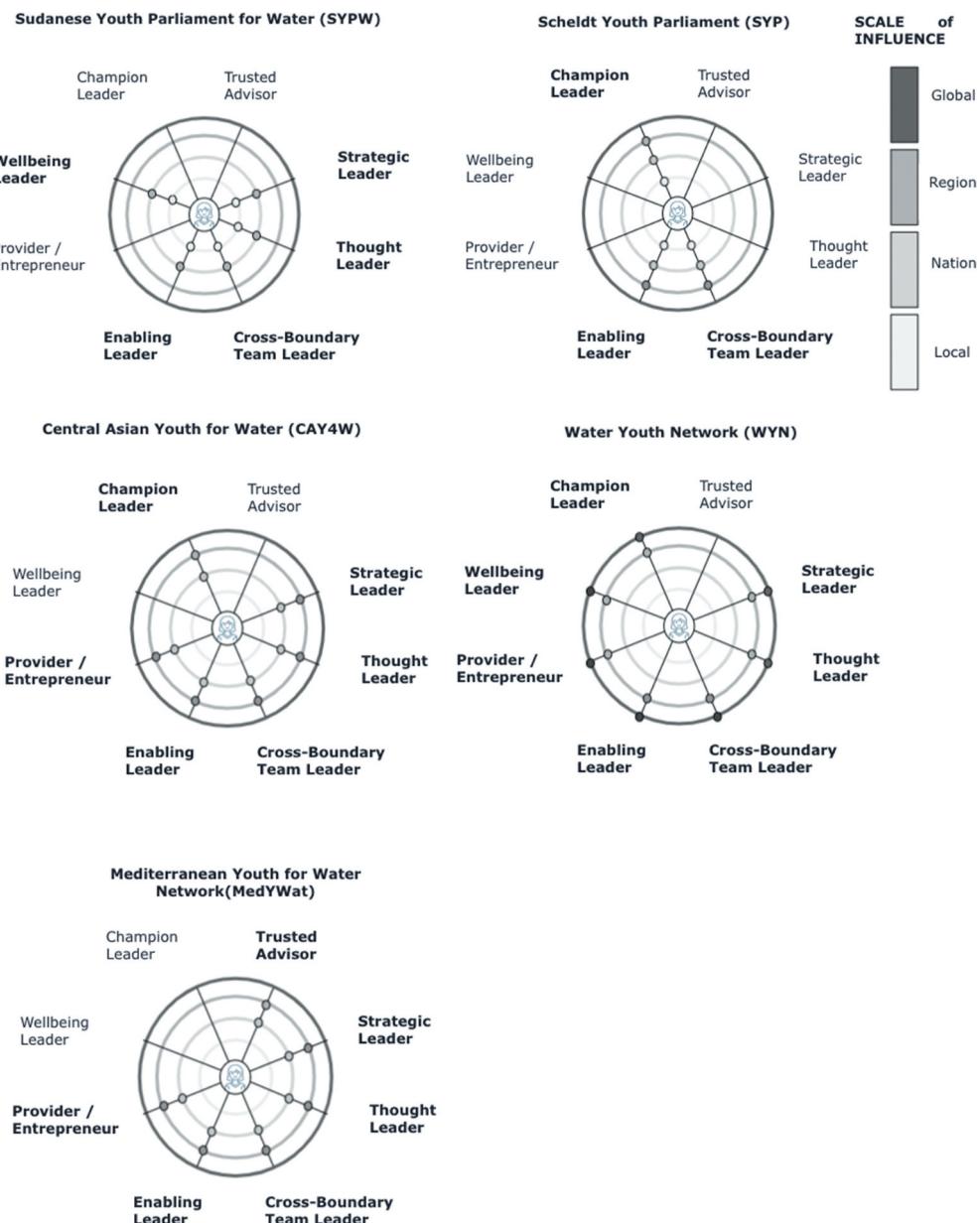


Figure 2. Analysing the roles of youth organizations in water cooperation.

As can be seen in [Figure 2](#), there are many ways young people, as individuals or collectives, contribute to water cooperation, conflict prevention and diplomacy. While public participation in decision-making can be a 'formality' that excludes young people due to power differentials, stakeholder engagement in the context of water governance could enable social learning where stakeholders become better aware of the situation and the concerns of others if the conditions of trust, ownership and continuity are met (Wehn et al., 2018). Action research could also be seen as an open space for fostering common understanding and cooperation through social learning.

The second research question pertained to the barriers and opportunities faced by young people when engaging in the dynamics of water conflict and cooperation. Barriers for young people to engage in transboundary water cooperation, where the influence of states is explicit, were particularly high. However, young people were shown to be resourceful in identifying opportunities to act in relation to their circumstances. Participants recognized themselves in multiple roles, and several in all. This insight reflected what young people articulated, that is, that in order to successfully overcome barriers to participation and exert influence to enable water cooperation, they must adapt to their environment.

Certain strengths and characteristics were identified in the study that amplify the ability of young people to take advantage of opportunities. These include: motivation, credibility, creativity, open-mindedness, curiosity, social networking, technological know-how, flexibility, mobility, capacity and knowledge. For instance, mobility allows young people to leave their geographical context in favour of work aligned with their values. However, it remains to be seen how the global pandemic affected youth agency and voice. Ajarma (2019) notes that the contributions of young people are limited by access to capital, travel and decision-makers, and transboundary platforms for exchange. Our research adds that individual factors such as lack of confidence, experience, network, political know-how and fundraising skills, as well as limited linguistic capacity and idealism, amplify existing systemic barriers. Young people use their individual strengths to overcome barriers to engagement in transboundary water cooperation or diplomacy, such as creativity, open-mindedness, technological know-how and mobility, but their efforts could benefit from interventions to overcome structural barriers to meaningful participation.

The recent youth-oriented policy literature (Ajarma, 2019; Civil Society Platform for Peacebuilding and Statebuilding & Youth Peace & Security, The Centre for Sustainable Development and Education in Africa (CSPPS/CSDEA), 2017; US Institute of Peace, 2019; Urdal, 2011; World Bank, 2014) acknowledges the potential for socio-economic development from investing in health, education and economic opportunities for young people. Investment in youth enables them to partake in income generation and to present an active voice in governance processes. The authors posit that political and economic inclusion lends to social stability, peace and water cooperation.

Financial input

Governments are increasingly coming up with policies that provide enabling frameworks and the appropriate resources for young people to make meaningful contributions. The Ministry of Foreign Affairs of the Netherlands, the Swedish International Development

Cooperation Agency (SIDA) and the Swiss Agency for Development and Cooperation (SDC) promote water cooperation and diplomacy, and actively advocate for youth inclusion. This official support provided opportunities for youth organizations such as the WYN, thanks to funding from the Ministry of Foreign Affairs of the Netherlands, to bring together young people from all over the world who are contributing to water cooperation and diplomacy. Similarly, the WYPW and its regional chapters offer youth programmes under the umbrella of the Blue Peace programme, which is supported by the SDC (Blue Peace, *n.d.*).

Overlapping networks further resourced and supported the aforementioned case studies. In the frame of the Blue Peace Movement, the SDC collaborates with various youth(-led) organizations, such as the WYPW, the European Youth Parliament for Water (EYPW) or Young Water Solutions (YWS). The latter was founded by young people within the WYPW, showing how such networks develop leaders. However, the overlap in networks could also be counter-productive due to a lack of proper coordination between the development partners on what they are doing in the very same field, in the very same basin, involving the very same people. Social learning through the collaboration of organizations allows for the clarification of roles, and a transformation of behaviours as evidenced by a shift from discussing 'why' young people need to participate in global water policy processes to 'how' they can take action (Wehn et al., 2018). Practitioners in the field should reflect on this to maximize synergies.

Partnering organizations provide the resources, network or in-kind support to allow young people to develop their projects and programmes. An example is the Centre for Mediterranean Integration (CMI) that supports MedYWat. By engaging the network of its supporting organization, the CMI and MedYWat can leverage additional support from organizations such as the International Water Management Institute (IWMI); International Centre for Water Management Services (CEWAS); French Development Agency; German Development Agency; European Investment Bank (EIB); International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM); World Bank; and the UK Foreign, Commonwealth & Development Office (FCDO). Plan Bleu is CMI's partner on several projects, and while Plan Bleu does not directly finance MedYWat, young representatives contribute to the MED2050 foresight exercise and serve as one of the relay networks to consult young people.

The SYP works with organizing partner GoodPlanet Belgium to support local youth water projects. In this way, they are able to ensure that advocacy can be complemented by actions implemented on the ground.

Without funding for implementation, the reach of young people is limited. For instance, in the survey, a participant of the Youth Water Community Central and Eastern Europe (YWC-CEE) noted that a pilot transboundary project presented at the Stockholm World Water Week 2018 was not yet implemented due to a lack of funding.

In all the ongoing case studies presented in [Table 1](#), the extent to which the activities can be developed is contingent upon the availability of adequate funding to allow for the young people to self-organize. However, if funds are provided, they come with a predefined scope of activities and expected deliverables. Private sector and donor organizations could influence decision-making on major infrastructure projects through funding.

Social and cultural acceptance

The lack of formal or defined roles for young people was found to limit their visibility and recognition, as well as to inhibit their own ability to identify pathways for involvement and emergent leadership within water cooperation and water conflict management processes.

Opportunities for diverse ethnic, gender or geographical perspectives in addition to recognition of the value of youth contributions are necessary to allow for meaningful participation by young people in water cooperation. If countries face hydro-political tensions, restrict travel and foster negative out-group dynamics, then water governance is securitized and this has a direct impact on young people seeking to engage in water cooperation, especially in a way that incorporates diverse upstream, downstream and regional perspectives. MedYWat is an example of an initiative that counteracts this by valuing inclusiveness, innovation and collaboration, and thereby incorporating 17 Mediterranean countries in its network.

Appealing to existing cultural norms and institutions is another strategy that young people can employ to gain support for their projects and programmes. The SYP, for instance, holds goals which align with, and are supported by, the Sustainable Development Goals (SDGs) and the objectives of the European Union (EU) Water Framework Directive.

With a lens on water governance in the Nile Basin, Goubert (2019) demonstrates that when young people were questioned on the obstacles to their engagement in water cooperation, they referred to the lack of confidence that exists between Nile Basin countries. According to respondents, this lack of confidence is not really targeted and addressed by politicians because it is 'internalized' and sometimes not considered important. The limited dialogue contributes to the lack of trust that inhibits collaboration (Wheeler & Hussein, 2021).

Calling themselves 'brother and sister' countries, the Nile Basin countries sometimes have very little interaction or practiced social acceptance. This is particularly visible through the number of visas, trips or tourists moving from one country to another in the basin, which is low, or almost zero, between some countries. The lack of economic relations between the countries was raised as a barrier to sustainable governance of the river basin by a participant. Young people also find that the promotion of the national interest by the Nile Basin countries, and the geopolitical dynamics which are at work, penalize the implementation of a spirit of healthy cooperation (Hussein & Grandi, 2015, 2017).

Sustainable institutional support and inclusion

A watershed approach is enshrined within the EU Water Framework Directive which enables young people to engage in transboundary water issues and for the SYP to foster a common basin identity. Since 2012, the SYP has been a member of the International Scheldt Commission and has sent an annual delegation to participate in their plenary sessions.

Continuous support from governments in Central Asian countries was identified as an indicator of success for the CAY4W network. The Aral Sea Basin covers the territory of five former Soviet states: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and

Uzbekistan. After gaining their independence in 1991, these countries are still learning to jointly manage their major transboundary rivers Amu Darya and Syrdarya. Complex networks of water-related problems in the region include issues of technical (old infrastructure), environmental (degradation of the Aral Sea), institutional (ineffective water management agreements and institutions), as well as political (lack of trust between countries, weak commitment to cooperation) character (Xenarios et al., 2018). Regardless of these challenges, the region boasts youth inclusion at all levels, from local-scale initiatives to involvement in high-level political processes and discussions on transboundary issues. Since 2017 young people from Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan have been given opportunities to participate in the river basin councils.

Participation in political processes does not equate to discursive inclusion. Although existing national strategies in Central Asia stipulate youth involvement in policy-making processes and support entrepreneurship, the role of youth in transboundary water management is restricted. Youth participation in these processes remains limited to passive listening and receiving information, and requires more focus on promoting capacity-building and engagement in order to stimulate future youth activities. This suggests that the criteria of social and cultural acceptance have not been satisfied.

Community connection and mobilization

The use of networks was leveraged by many young people. MedYWat engages young professionals in the Mediterranean from different disciplines working in the water sector to develop a knowledge-based platform for sharing best practices and opportunities while fostering cross-linkages between MedYWat and key regional decision-makers (Pedrero et al., 2018).

Coordination among groups and networks contributes to a robust and connected community in the Mediterranean. For instance, MedYWat is supported by the CMI, which is a multi-partner platform based in Marseille, France, where development agencies, governments, local authorities and civil society from around the Mediterranean convene in order to exchange knowledge, discuss public policies and identify the solutions needed to address key challenges facing the Mediterranean region. This includes an inter-generational component where CMI financed young Mediterranean water professionals and volunteers to expand their scope beyond networking to share and produce knowledge amongst peers, resulting in a series of working papers on water conflict.

Elsewhere in Europe, the SYP, with members aged between 16 and 30, works towards its mission to develop a common basin identity, the 'Scheldt identity', by participating in and organizing international exchanges such as the EYPW. During the 15th EYPW in 2019, 80 young people from Europe gathered around the focus of the river basin as the backbone for regional development (Barseghyan & Vesnovskii, 2021). The SYP was in attendance and is an example of non-governmental transboundary cooperation that exists between members from France, Belgium and the Netherlands – countries that are being irrigated by the Scheldt River.

The SYP is an example of continuity across generations. At the end of the 1990s the Scheldt River was one of Europe's most polluted rivers. The industrial districts and sewers of city's such as Antwerp, Vlissingen and Cambrai discharged their wastewater into the river. Furthermore, to improve their trade possibilities, huge parts of the Scheldt River were

canalized and straightened. These actions had severe consequences, causing an enormous loss of biodiversity and increasing the risk of flooding (Meire et al., 2005). In 1999, a group of young people came together in Espalion, France, and stated that the situation had to change. In 2006, they met again and in 2008, an action plan was created and the SYP was born.

Capacity and skills development

Capacity development for young people can be led top-down (e.g., by donor institutions) as well as bottom-up (through a youth-led approach). The academic community develops capacity through the Universities' Partnership for Water Cooperation & Diplomacy, which brings together universities on a global level to coordinate research and sets up transboundary learning opportunities. Technology can help build capacities across borders. The use of digital tools such as webinars or massive open online courses (MOOC) allows near open access for youth around the globe, provided that access to technology and the internet are not barriers.

Globally, the WYN contributes to building capacities for their members and the wider public through leadership programmes, workshops, blogs or presentations. The network is open to young people under 35 with a degree who wish to volunteer time to sharing best practices and implementing the SDGs at the international and local levels. The network framework helps open doors that might otherwise remain closed to individual young people. The main challenge is that network members often work full time, creating a difference in power and possibilities as well as commitments.

In the Aral Sea Basin, a need for educational preparation and professional capacity of young water specialists of the region was identified. A number of donor-driven initiatives, such as CAY4W, responded by offering expert seminars, scientific-research colloquia and thematic contests for university students. However, a strongly hierarchical society (Collins, 2003) and limited capacities for youth to act limit youth's role in the Aral Basin in practice to connectors and providers.

In the Mediterranean, MedYWat is making efforts to strengthen its members' capacity and outreach by facilitating exchanges and collaborations. For instance, MedYWat has facilitated the joint development of analytical work on topics such as the water–migration–climate change nexus. MedYWat has also organized webinars and workshops to disseminate the members' work. Most recently, MedYWat has co-organized, with the CMI and CEWAS, a regional entrepreneurship e-hackathon on water and climate change, bringing together young professionals to create entrepreneurial solutions for the most pressing water challenges in the region.

Security

Some young people active in the field of transboundary water cooperation and conflict prevention identified security risks as a barrier. To mitigate risks to career or personal security, they used their strengths to effectively adapt to viable roles that allowed them to contribute to discussions, such as taking up the role of independent researcher or a journalist in situations where it proved more effective to amplify narratives. These initial findings are confirmed by the UN (2020), which points to the violations of human rights among the

structural barriers that limit the influence of young people on decision-making and identifies the need for enabling environments for young people regardless of their nationality, ethnicity, caste, class, religion, gender, sexual orientation or political affiliation.

Within the Nile Basin, most negotiations that occur over transboundary waters are considered matters of national security. Given the elevated importance of water diplomacy on the Nile the involvement of youth, civil society and NGOs becomes a political nuisance for decision-makers. As a result, their involvement may be managed by the governments as a check-box approach to participation. To verify this claim, future research could explore negotiations about the Grand Ethiopia Renaissance Dam to assess the degree to which young people were involved. The Nile example, in fact, is interesting because it shows how young people from the region, as well as abroad and outside the basin, are involved in several initiatives, especially organized by Egypt, about water, the Nile, the environment, social causes, culture, youth and music. Particularly interesting is a recent education and development initiative called Nile Project that focuses on music as a unifier to help find new ways to share the common water resource.

In some Nile Basin countries, young people come together in networks to share knowledge and make their voices resonate within their country and beyond, especially concerning water governance. Youth networks can take different forms and act on multiple scales, from local associations to national, regional or international networks. For example, the SYPW is a network specifically dedicated to water-related issues in Sudan that recognizes young people as key stakeholders in the water sector at all levels. The SYPW is a network operating within a country that is involved in transboundary issues not directly, but indirectly. They were the main organizers of Nile Day (under the auspices of the Nile Basin Initiative (NBI) and Sudanese Minister of Water); however, due to ongoing conflict, their capacity to operate is constrained.

Barriers to basin cooperation

To take the example of water governance in the Nile Basin, no single network of young people brings together all the youth in the basin and jointly reflects on a common vision for sustainable governance. The SYPW established in Sudan is national. The MedYWat network works at the Mediterranean regional scale and can evoke issues with upstream countries that are not Mediterranean coastal countries. The WYN works internationally but has an interest in localized case studies (*n.d.*).

Dialogue is sometimes broken between basin countries, which rarely interact economically. Workshop participants noted that limited dialogue inhibits collaboration and reflects an internalized mistrust. In this way, states can apply ideational power to legitimize ideas or frame narratives that securitize dialogue and effectively silence issues (Cascaño & Zeitoun, 2010). An Ethiopian inhabitant can have difficulties in obtaining a visa to Egypt during a time of tension between the two countries. Furthermore, the securitized nature of discourse about Nile water management was correlated with limited opportunities for young people to engage outside of government-initiated processes.

Work therefore remains to link networks and initiatives of young people from the 11 Nile Basin countries so that they may reflect together on the future of water governance in the region. Africa is home to the youngest population in the world, with 60% under 25 in 2019 (United Nations Department of Economic and Social Affairs (UNDESA), 2019).

The Nile Basin countries are no exception; seven of the 11 have a younger population than the continent's average. It is therefore essential to invest strategically in future opportunities for youth; to take an interest in their desires, aspirations and visions for the future; to understand how they organize; and to understand how their actions can concretely affect complex situations, such as water governance in the basin. By giving them a leading role in certain projects, confidence and the means to implement their initiatives through partnerships, we posit the optimistic and solid conclusion that young people could be a key to unlocking water disputes.

Digital engagement

Individuals may seem helpless facing geopolitical situations shaped by governments, international organizations, donors and other powerful actors at different scales. However, virtual communication can give a voice to the people and ensure some continuity of exchanges when there is difficulty in meeting face to face. For example, Altiok and Grizelj (2019) show how the young people from the South Sudan Civil Society Forum amplified their power as observers of the South Sudan High Level Revitalization Forum using sunglasses, photographs and the social media campaign #SouthSudanIsWatching. Thanks to the Internet and virtual exchanges, young people can overcome political and diplomatic obstacles, to some extent, and recreate spaces for dialogue. Nevertheless, discussing securitized issues may pose a danger, so virtual exchanges may work in some cases – for instance, during pandemics – but be more challenging if trust is not built first.

To use the example of the workshop organized in Cairo by the WYN in June 2019, several registered participants were ultimately unable to travel to Egypt, the majority due to having visa problems. Here, virtual communication gave voice to those not there in person, so they could follow the sessions day by day, provide their ideas and comments, and participate in drafting the final recommendation note. Physically absent, these young people nevertheless also participated fully in the workshop. The ability to adapt and resolve blocked situations is particularly visible in youth networks, and is, for them, essential.

Conclusions

Rather than being mere disruptors or victims, the findings point to a diverse self-organizing and emergent ecosystem of young people engaged in water cooperation and conflict who adapt according to context and opportunities. The key functions young actors play in water cooperation were synthesized into eight roles: champion leader, trusted advisor, strategic leader, thought leader, cross-boundary team leader, enabling leader, entrepreneurial leader and well-being leader. It must be noted, however, that a spectrum of constructive and destructive manifestations might exist within these categories. Holding many different roles, or switching between them, the young change-makers consulted revealed an adaptive nature. Further research might reveal the potentially 'self-selected' nature of individuals drawn to this sector.

To sustain the continuum of transboundary water cooperation, related negotiations, and projects over time, all parties must be satisfied with the gains made (UNECE, 2015). If opportunities for civic engagement, meaningful employment and youth involvement in decision-making are lacking within water governance systems, then the possibility of young

people to contribute constructively to those systems is lessened. Therefore, and especially within the context of formal diplomacy, the authors suggest the early inclusion of young people for benefit-sharing ambitions to be achieved through the ongoing use and adoption of institutional mechanisms for cooperation. Building upon the barriers and opportunities identified, an enabling environment was determined to include six criteria: (1) financial input, (2) social and cultural acceptance, (3) sustainable institutional support and inclusion, (4) community connection and mobilization, (5) capacity and skills development, and (6) security.

Further research is needed to identify other projects or activities for young people and transboundary water cooperation and diplomacy that accounts for regional nuances and cultural differences. The political priorities and agendas of institutions that support youth engagement in this field merit further study and could include political stability or migration control. Future studies should account for how the role of young people could differ, depending on the degree of transboundary water cooperation or conflict present. Subsequent studies could contribute to a robust analysis of those financing similar initiatives and thereby influence basin agendas. Identifying a comprehensive list of government policies for youth inclusion in water governance would benefit future comparative analysis. This approach would facilitate a critical analysis of youth engagement processes.

Action research pertaining to young people's involvement in peace-building is an opportunity to design online and offline platforms as 'innovation labs or hubs' for youth engagement, such as workshops, webinars and grassroots discussions. Such spaces allow for further assessment of the roles of young people in transboundary water cooperation. These spaces contribute to a more peaceful world by fostering continuous dialogue between governments, communities and young people. With a lens on water resources management, such intragenerational and intergenerational platforms could contribute to SDG 6.5: 'By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.'

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Author contributions

NV, RH, and HH developed the methodology, research design, theoretical framework, and literature review. NV, RH, TN and AG delivered the 2019 youth in water diplomacy workshop in Cairo. NV took the lead in drafting the manuscript and framework. TN, AB, AG, BS, FP, and SP contributed with data collection and case study examples. All authors contributed to a different extent to the analysis of the data. SD provided feedback and inputs throughout the project. HH secured funding to publish open source. All authors contributed to the final manuscript.

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