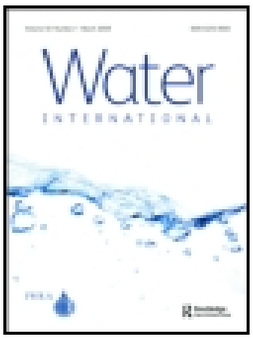

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International water law and hydropolitics: an enquiry into the water conflict between India and Nepal

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ABSTRACT

Despite an open border, shared culture, religious ties and strong people-to-people connectivity, governance of transboundary water resources has often led to diplomatic conflicts between India and Nepal. It is not unusual for hydro-development projects between the two to run into delays or opposition, despite great domestic need for water and electricity in both countries. Using fieldwork in Delhi and Kathmandu, this paper illustrates the factors that impede cooperation between the two sides on shared rivers and how the inadequacies of international water laws manifest themselves in bilateral negotiations on water governance. The paper locates the benefit-sharing framework in international water law using the case studies of the Pancheshwar and the SaptaKoshi–SunKoshi Project in the Mahakali and Koshi basins.

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Benefit-sharing; hydropower; Pancheshwar; Koshi; UN Watercourses Convention (UNWC)

Introduction

Governance of transboundary water resources originating in the Himalayas and flowing through Nepal into India has been a source of bitterness and animosity between the two states. The Koshi and Gandak treaties signed by India and Nepal in 1954 and 1959, respectively, had to be amended and revised in 1966 and 1964, respectively, following protests by Nepal. The provisions of the Mahakali Treaty, signed in 1996 and ratified by the Nepali Parliament in the same year, have not yet been realized. Despite an open border, strong people-to-people connections, and a sense of shared culture, religion and heritage, tensions over transboundary waters have often led to widespread hostility against India among Nepali citizens, and water is also cited as the reason for ruptures in the bilateral relations (Bhushal, 2014; Gyawali & Dixit, 1999; Swain, 2018). Based on fieldwork in India and Nepal, I explain how the inadequacies and incongruities of the UN Watercourses Convention (UNWC) stifle cooperation between the two states on multi-purpose reservoirs in the Mahakali and Koshi basins. In particular, I show how international water law fails to provide a resolution on issues such as benefit-sharing, prior versus equitable rights, equal versus equitable use, and calculating benefits.

It is becoming increasingly essential to address the inadequacies of international water law as states turn to dams to address climate change impacts (Ahlers et al., 2015; Dye, 2019; Gerlak et al., 2019; Karambelkar, 2017). Having saturated domestic rivers, often

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enough these dams are on shared, transboundary rivers (Elhance, 1999). Globally, there are 286 transboundary rivers and lake basins (UN-Water, n.d.), and 468 aquifer systems outside the EU, Switzerland and Norway (IGRAC, 2021). At least 153 countries have territories within these transboundary rivers and lakes, and almost every country has territory with a transboundary aquifer. These water resources face challenges arising from increasing population, urbanization, industrialization, degradation of the environment and hydrological variability (UN-Water, n.d.). As we will see, asymmetrical power equations over these transboundary water resources governance and negotiations are further complicated due to ambiguous and ineffectual international laws.

Hydropolitics of transboundary water resources

Until recently, the literature on hydropolitics of transboundary water resource governance had not taken power asymmetry between states into consideration (Vij et al., 2020a). There have been recent attempts to address this power blindness. A special issue of *Water International* investigated the impact of various forms of power on hydro-diplomacy and transboundary interactions between states.[1] Other attempts to understand the various forms of power as variables in transboundary water interaction include Woodhouse and Zeitoun (2008), Zeitoun and Allan (2008), Cascão and Zeitoun (2010), Zeitoun and Warner (2006), Mirumachi (2015, 2020), Daoudy (2008) and Vij et al. (2020b). These scholars identified the various forms of power in the transboundary context. Some of the forms of power are economic, military (or 'hard power'), ideational power and geographical power (Cascão & Zeitoun, 2010). A state with higher financial resources can afford to better exploit shared rivers, even if unilaterally, and military power can be used by states to compel riparian neighbours over shared rivers, should the state decide to use covert force. However, it is important to note here how ideational or geographical power plays a role in the hydropolitics of shared water resources. For instance, in order to interpret and use international laws, multilateral treaties or lobby in international organizations, states may require the power of ideas or expertise. A useful measure of this ideational power can be the sizes of states' delegations to international organizations (the United Nations or World Trade Organization (WTO), for example) since delegations could build alliances with fellow riparians, lobby with the chair of the organization, prepare drafts for negotiators and counter the ideational power of the stronger riparian. Another measure of ideational power can be the ability of states to use legal representation (often very expensive), or the availability to research organizations or think tanks domestically to research and equip the organizations with arguments (Panke, 2012a, 2012b). Ideational power is often derived from financial power. Geographical power matters immensely in governance of shared rivers, though not conclusively, and the discussion on water law that follows in this paper highlights how riparian positions often determines how resources will be managed. Cascão and Zeitoun (2010) argue that upper riparians have a distinct advantage as they can divert or dam rivers, though geographical position is not the ultimate factor and can be subservient to financial power.

An interview with a Nepali scholar revealed how the lack of established think tanks (private and government funded) relative to India puts Nepal in a weaker position in negotiations with India.[2] This is corroborated by Vij et al. (2020b) who argue that India uses its ideational and material power to maintain the status quo in the Brahmaputra

basin with Bangladesh. The emphasis here is on the material and ideational powers, but the paper also deals with geographical variables, namely India's position as the upstream state vis-à-vis Bangladesh. This geographical power allowed Indian policymakers to take unilateral decisions (Vij et al., 2020b). To be sure, it would be incorrect to claim India as a hydro-hegemon going by the definition set by Zeitoun and Warner (2006). Hanasz (2017) maintains that while India has not (yet?) become a hydro-hegemon, it has also not been able to engage in positive-sum interactions on transboundary water resource governance. In other words, neither hegemon nor ally.

Taking a considered view of power as a variable in bilateral riparian relations, this paper focuses primarily on how the inadequacies of international water laws manifest themselves in bilateral negotiations on water governance between India and Nepal. It departs from the literature on power in hydropolitics to locate the role of international water laws in transboundary disputes. The paper illustrates how India and Nepal have varying interpretations of international water law and the implications of these laws in governing the projects on shared rivers. These interpretations are often self-serving and at odds with the principles that have guided the governance of transboundary rivers elsewhere (Table 1). I do this by taking the case study of large dams to be built jointly by India and Nepal and explaining how some specific self-serving interpretations of law impede cooperation between India and Nepal on shared waters. These dams are the Pancheshwar Multipurpose Project and SaptaKoshi High Dam Multipurpose Project, and SunKoshi Storage Cum Diversion Scheme – the latter two being elements of the same project and jointly referred to here as the SaptaKoshi–SunKoshi (SKSK) project.

Whilst this paper looks at the shared governance of both the basins (Mahakali and Koshi) using the case studies of the Pancheshwar and SKSK, it is essential to point out that the Pancheshwar project has been under negotiations since 1996. On the other hand, the SKSK project is in the investigation stage as of July 2021. Therefore, in Pancheshwar, this research finds a stronger reference point, richer history of negotiations to document and more stakeholders to interview. The SKSK project is used as a case study to assess if more recent projects experience the same hurdles as Pancheshwar.

Table 1. Incentives for cooperation, case studies and mechanism for sharing benefits.

Incentive for cooperation	Case study	Type of benefit-sharing mechanism
Cooperation leads to higher gains compared with unilateral action	Development of dams on the River Senegal by Mali, Mauritania and Senegal	The cost of the project is shared proportionate to the benefits received by each state
Altering the design of a dam upstream will increase aggregate net benefits	Columbia River Treaty between Canada and the United States	The party altering its unilateral dam design is compensated for any losses it incurs as a result of this alteration, and net benefits of cooperation are shared
Locating a dam upstream will increase aggregate net benefits	Lesotho Highlands Water Project on the River Senqu–Orange	The downstream state convinces the upstream state to build a dam, covers the cost and shares the net benefits derived from the dam
Compensating for the negative impacts of projects will preclude conflict	Aswan High Dam on the Nile River	The downstream state compensates the upstream state for the damage caused by the project and shares project benefits
A joint dam on a border river will produce mutual benefits	Kariba Dam on the River Zambezi (Zambia, Zimbabwe); and Itaipu Dam on the Río Paraná (Brazil, Paraguay)	The cost of the project is shared proportionate to the benefits received by each state

Source: Hensengerth et al. (2012).

The remainder of the paper is structured as follows. The next section contextualizes the case studies. It introduces the Pancheshwar and SKSK projects and the controversies surrounding the Mahakali Agreement of 1996. The third section expands on the methodology of the study, the data collection and analysis methods, and the process of recruiting participants for this research. The fourth section introduces international water law, locates the principles of benefit-sharing in the law, and presents the conflicts between Articles V and VI and Article VII of the UNWC. The fifth section introduces and discusses the findings of the research. It locates how the inadequate benefit-sharing principles in UNWC and the confusion over calculating benefits stifle cooperation between Nepal and India. We discuss how disputes over Article VI on the UNWC that determine the factors leading to equitable utilization, the struggle over prior use and equitable use, and the confusion over equal and equitable rights hinder meaningful cooperation over shared rivers between the two sides. The final section concludes and discusses the way forward.

The cases

The Mahakali Agreement of 1996 was intended for the development of the Sarada and Tanakpur barrage along with the building of the Pancheshwar multipurpose hydropower project. The Mahakali River constitutes Nepal's western border with India (Figure 1).

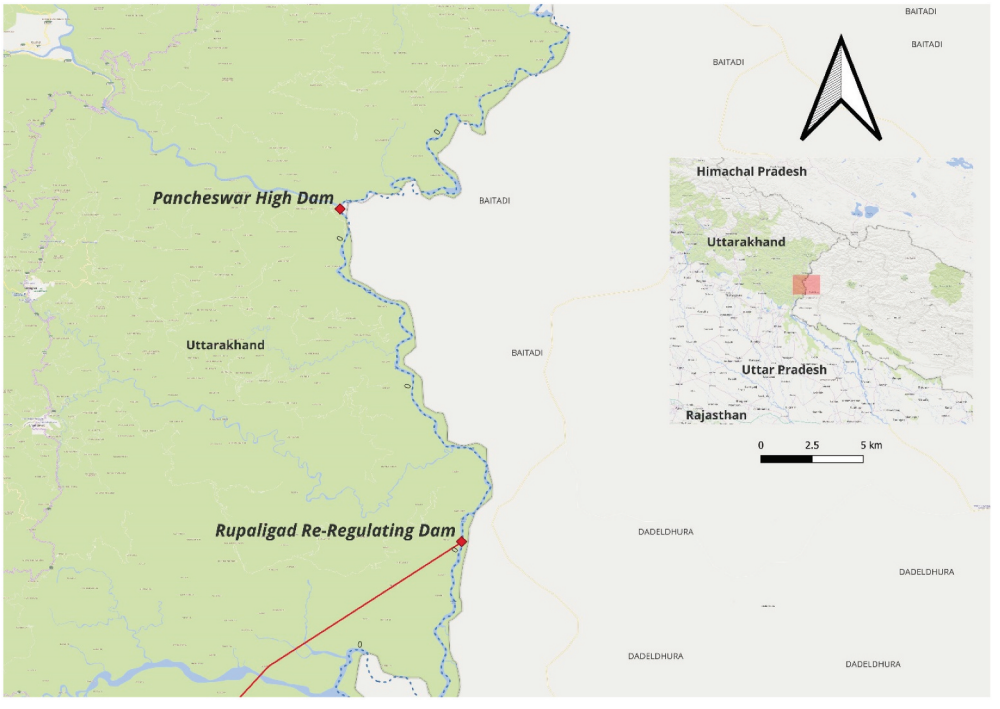

Figure 1. Location of the Pancheshwar High Dam and the Rupaligad re-regulating dam along with the segment of the Sarada–Yamuna River linking them.
Source: Author using geospatial data from Higgins et al. (2018).

The exact source of the river is a matter of bitter contention between the two countries, with India claiming that the river originates in the Kalapani region at an elevation of about 7820 masl and is part of Uttarakhand's Pithoragarh district. In contrast, Nepal asserts that the river originates either in Limpiyadhura (15 km from Kalapani) or in Lipulekh and is part of its Darchula district (Jha, 2020; Rising Nepal, 2020; Shukla, 2019). Both countries also claim the strategic tri-junction of Kalapani, where the Indian, Nepali and Tibetan (Chinese) borders meet, as their own, and this also resulted in a diplomatic standoff (Nayak, 2020). In June 2020, the Nepali Parliament passed an amendment promulgating a new map of the country featuring areas of Lipulekh, Kalapani and Limpiyadhura in the Constitution of Nepal, causing a diplomatic furore.

The Pancheshwar project is envisioned as a 315-m-tall rockfill dam on the Mahakali along the India–Nepal border. According to the detailed project report, the purpose behind the Pancheshwar project is to store the monsoon precipitation in reservoirs upstream for use during the lean season and divert them to regions facing water scarcity. The project aims to irrigate an additional 93,000 ha of land in Nepal and 259,390 ha of land in India (Water and Power Consultancy Services (India) (WAPCOS), 2017). The project is also designed to be an important element in the Yamuna–Sarada link that envisions transferring the 'surplus water' to deficit rivers to ensure water security (Figure 2). The total electricity generation capacity of the project is said to be 5040 MW with an annual capacity of 9116 GWh (WAPCOS, 2017).

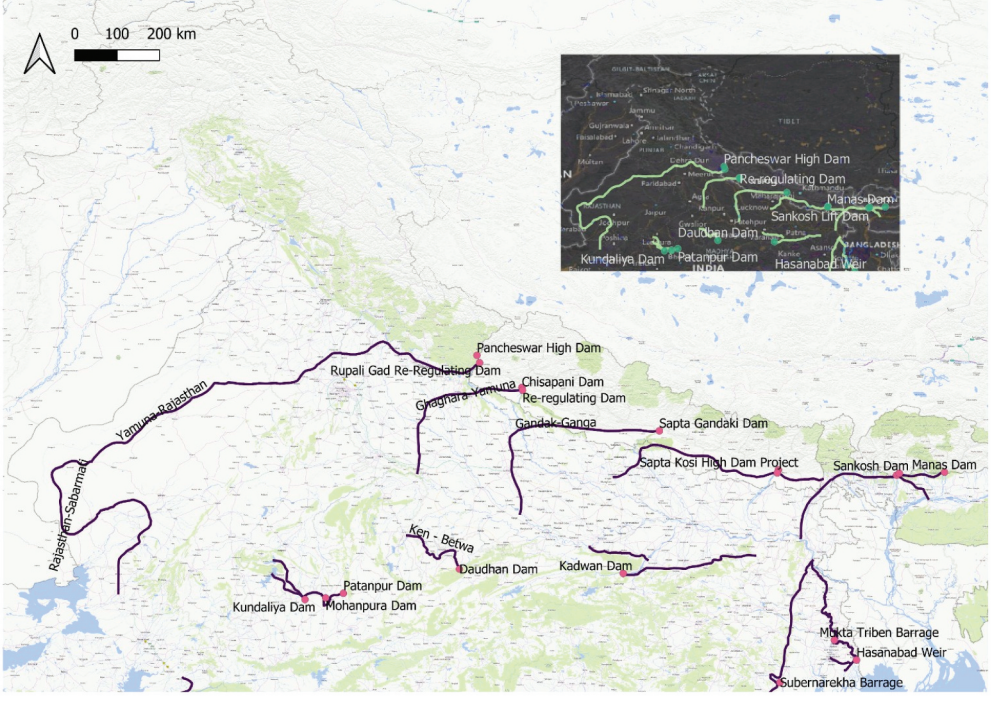

Figure 2. Location of the SaptaKoshi–SunKoshi (SKSK) project and Koshi–Ghagra River linking segment. Source: Author using geospatial data from Higgins et al. (2018).

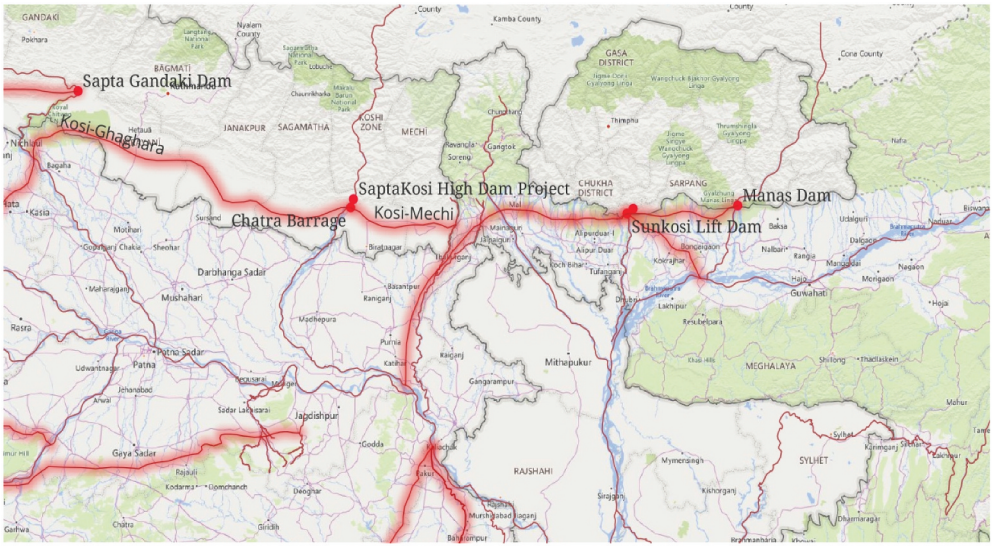

Figure 3. Himalayan component of the interlinking of Indian rivers with storage reservoirs in Nepal and India.
Source: Author using geospatial data from Higgins et al. (2018).

The SKSK project (Figure 3) has been presented by successive Indian governments as an answer to periodic floods in Northern Bihar (Central Water Commission, 2021; Ministry of Power, 2019). The SKSK is designed to have a high dam of height 269 m (the SaptaKoshi High Dam) and a capacity to generate 3300 MW of electricity (Ministry of Energy, Water Resources and Irrigation, Government of Nepal, n.d.). This project has been criticized by civil society groups that suggest that instead of trying to tame the river, the Koshi plain should be treated as a flood plain, and the river should be allowed to run without restraint during the monsoon, instead of locking it in embankments and trying to control its natural flow (Dixit, 2020; Mishra et al., 2008). Nevertheless, successive governments managed to push the project ahead, with both countries investigating the project as of January 2021.

Methods

This research is informed by semi-structured interviews with various key stakeholders (n = 44) in both countries (see Table A1 in Appendix A). These key stakeholders are information-rich cases and were identified using purposeful sampling. The rationale for their selection was their ability to provide insights into the research based on their experience working on India–Nepal water and energy relations. To understand bilateral negotiations on the projects, I interviewed Indian and Nepali negotiators from the 1996 team that drafted the Mahakali Treaty, officials from both sides investigating the SKSK project and members of the Pancheshwar Development Authority.[3] While the snowballing method was used to collect data from serving and retired bureaucrats, officials were also traced using LinkedIn and using the minutes of project meetings where their

attendance was noted. These minutes of the meetings are available on the Nepali government's websites for the Pancheshwar and SKSK projects. In Kathmandu attendance at conferences on India–Nepal bilateral relations was used to interact with key informants, and this helped in recruiting participants.

Interviews were transcribed and uploaded on NVIVO,[4] where they were coded and analysed thematically. During the thematic analysis of the interviews, a semantic approach was adopted wherein data were interpreted to find patterns, meanings and implications.[5] As a result of the lockdown that was imposed in the Kathmandu valley on 29 April 2021 due to the COVID-19 pandemic, plans to visit the SKSK Joint Project Office in Biratnagar and the office of SJVN Arun-3 Power Development Company in Tumlingtar had to be aborted.

Studies on transboundary water governance using key informant interviews are common in qualitative research as they allow a deeper focus on complex issues (Barua, 2018; Fischhendler & Katz, 2013; Milman et al., 2020; Mirumachi, 2020; Warner & de Man, 2020; Zeitoun et al., 2019; Zinzani & Menga, 2017). Bureaucrats, especially those still in service, can be reserved about discussing matters involving international diplomacy. To address this, I emphasized interviewing retired bureaucrats. As the steel frame of governance, they contain a rich reservoir of information. As Seldon (1988, p. 10) claims, bureaucrats can also be the perfect interviewees who are 'dispassionate creatures' with a barrage of information in 'mental boxes that can yield rich harvest to those who take the trouble to prise them open'.

Water laws and benefit-sharing

Genesis of international water law

In May 1997, the United Nations General Assembly adopted the UNWC – formally called the Convention on the Law of Non-Navigational Uses of International Watercourses. States looking to develop and manage shared water resources look at the Convention for guidance (Hensengerth et al., 2012; Lee, 2015; Tawfik & Ines, 2018; Upadhyay & Gaudel, 2017; Yihdego et al., 2017). With just 16 signatories and 37 'parties to the convention' (neither India nor Nepal is a signatory or party to this Convention), most states remain outside the Convention's purview. However, its adoption in the UN General Assembly gives states a point of reference during negotiations. The UNWC itself succeeded the Helsinki Rules[6] adopted by the International Law Association in 1966. The principle of 'reasonable and equitable utilisation of water' was established by the Helsinki Rules (Salman, 2007). Although the Helsinki Rules are not legally binding, they are the 'single most authoritative and widely quoted set of rules' governing transboundary waters (Salman, 2007, p. 630). In August 2004, a revised form of the Helsinki Rules was approved by the International Law Association called the Berlin Rules. These rules are more extensive than the Helsinki Rules and UNWC and try to conciliate the conflict between the principles of reasonable and equitable utilization and the obligation to not cause harm. However, Salman (2007) states that instead of clarifying the relationship between these two principles, the Berlin Rules have added to the confusion. Since the UNWC was adopted by the UN General Assembly following consultation with states, they are preferred over the Helsinki or Berlin Rules as a point of reference during negotiations.

Locating benefit-sharing in international water law

The concept of benefit-sharing does not have an authoritative definition since it is not explicitly mentioned in either of the international water law principles.[7] Nevertheless, it has been defined by some scholars as 'any action designed to change the allocation of costs and benefits associated with cooperation' (Sadoff & Grey, 2005, p. 422). Benefits here have been defined as 'economic, social, environmental, and political gains' (p. 421). The practice of benefit-sharing in international watercourses is believed to have started with the 1961 Columbia River Treaty between Canada and the United States (McIntyre, 2015; Tarlock & Wouters, 2007). The treaty addresses the issues of benefit-sharing between Canada and the United States wherein upstream Canada is entitled to receive compensation for the downstream benefits accrued by the United States.

While international water laws do not explicitly deal with benefit-sharing, their principles on 'equitable and reasonable utilisation of international watercourse'[8] and the 'obligation of states not to cause significant harm to co-riparians'[9] address the contentious issues of benefits-sharing in transboundary water resource governance. These contentious issues include questions over sharing of water for various uses: irrigation, drinking, maintaining environmental flows, flood control and hydropower generation. It could also involve questions of who pays how much as compensation to the affected communities, the legal validity of prior rights over water[10] and which side gets how much share of the hydroelectricity.[11] The provisions under 'equitable and reasonable utilisation' and 'not causing harm' are meant to help in addressing these fractious questions. Hensengerth et al. (2012, p. 02) interpret benefit-sharing as the 'translation into practice' of international water law – translation, especially, of the principles of equitable and reasonable utilization and the absence of harm. Data gathered from India and Nepal reveal that it is these questions over benefit-sharing that are a hurdle to cooperation between the two states (more on this in the following sections). It is then essential to locate benefit-sharing in international water law and examine why it is proving to be ineffectual in the Indo-Nepal case.

'Significant harm' versus 'reasonable, equitable use': contentious interpretations

Interpretation of the principles of the UNWC has been a contentious issue between states. The source of conflict is the often-self-serving interpretation by states of the Convention's articles on 'equitable and reasonable utilisation and participation' and the 'obligation not to cause significant harm' (UN, 1997). Upstream states have tended to favour the principle of equitable and reasonable utilization of the UNWC during negotiations, while downstream states invoke the obligation of states not to cause significant harm (McIntyre, 2015; Salman, 2015). Many upstream states believe that the Convention is biased against their interests and favours downstream states due to Article VII calling for watercourse states to take 'appropriate measures to prevent the causing of significant harm to other watercourse states' (Salman, 2015; [UN, 1997, p. 05). The obligation of not causing significant harm is perceived by upper riparian states to be stacked against them as it forecloses their options of using water resources within their boundary and protects the existing use of transboundary rivers by lower riparian states against the activities of upper riparians (Salman, 2010, 2015). The upper riparians favour

Articles V and VI, which call for 'equitable and reasonable utilisation and participation' of watercourses by states in their respective territories (UN, 1997, p. 04).

On the other hand, downstream states express their annoyance at the perceived subordination of the 'no-harm' principle to the 'equitable and reasonable utilisation' principle by abstaining from the 1997 UN General Assembly vote on the Convention (Salman, 2015). Downstream states subscribe to the no-harm obligation as they believe that this principle protects their existing use against any projects or measures that could affect the water flow. Additionally, downstream states believe this principle mandates upstream states to notify them of any project and assure them such measures would not harm their interests (Salman, 2007). As we shall see below, the relationship between these two principles and disagreements over which principle takes precedence continues to cause misunderstandings, particularly in the India–Nepal riparian relationship when they debate over the legal validity of the lower Sarada barrage and how to divide the waters of Mahakali.

Cooperation between states on building and governing projects on shared rivers depends on geography, the position of states in the basin and power structures. Hensengerth et al. (2012, p. 32) state that cooperation between states depends on 'hydrological and political boundaries and the location of the dam in relation to them'. The incentives for states to cooperate on transboundary development, the case studies that illustrate incentives and the mechanism for sharing benefits in these case studies are illustrated in Table 1. In certain cases, benefit-sharing arrangements involve payments for benefits or compensation for costs. For instance, the downstream state may pay the upstream state for watershed management that benefits the former, such as reduced flooding and sediment load (Sadoff & Grey, 2005). More generally, benefit-sharing is valuable since it focuses on sharing benefits from the transboundary river beyond merely sharing volumetric quantities of water (Sadoff & Grey, 2002).

Critics of the benefit-sharing framework argue that it prematurely apportions future usage of the benefits and ignores the detrimental effects on the aquatic ecosystem of the rivers (Tarlock & Wouters, 2007, p. 524). Shared benefits also ignore questions of social justice, poverty alleviation or the failure of these projects to benefit the affected communities (Tarlock & Wouters, 2007). Though this paper does not intended to look at the role of large dams in alleviating the impacts of climate change or examine the social implications of dam-building, it is important to note that Tarlock and Wouters (2007) have criticized the benefit-sharing framework for not engaging with these larger debates.

Findings

Benefit-sharing in the Indo-Nepal hydropower context

The root cause of the conflict lies in the disagreements between the two countries on sharing water and benefits, cost apportionment, the interpretation of the source of the river, the status of the lower Sarada barrage, and calculating downstream benefits. The share of each side towards the project's cost depends on its respective benefits (Mahakali Treaty, 1996). Benefits, in this case, are calculated as hydroelectricity, and the additional volume of water available after the project comes up. This water would be used for irrigation, flood control, interlinking of rivers, inland navigation, maintaining existing

canal networks, etc. (WAPCOS, 2017). However, some of these benefits are contested by the downstream country – India – as the paper will illustrate below. While it is not yet decided how the costs of the SKSK project will be shared, it is widely assumed in both countries that it will follow the principle set in the Mahakali Treaty of cost-sharing according to the benefits accrued. Nepali officials accuse India of underplaying the benefits that it will receive from these projects as a strategy to undercut its share of the cost towards the project.[12]

Factors determining equitable share and territorial disputes over Mahakali

According to Article V of the Helsinki Rules and Article VI of the UNWC, the factors that determine a reasonable and equitable share of the benefits include the geography and hydrology of the basin. In particular, the extent of the 'drainage area in the territory of each basin State' and the 'contribution of water by each basin State' (Helsinki Rules, Article V). There is a consensus among serving and retired Indian hydrocrats from various departments that such is the geography of the Mahakali River basin where the Pancheshwar project is supposed to be built, that 80% of the catchment area is within India and only 20% within Nepal; 80% of the rainfall that feeds the river is within India, and 67% of the submergence due to the dam is also on the Indian side.[13] The area that will be submerged and affected on the Indian side is densely populated compared with Nepal. Therefore, displacement and the consequent costs of resettlement and rehabilitation of people are higher on the Indian side.[14] While customary laws such as Helsinki Rules have guided the drafting of the Mahakali Treaty, there is an assertion among Indian hydrocrats that India has been generous with Nepal, despite much lower costs (in terms of submergence and people to be resettled), and despite international law on their side. Nepal's insistence on sharing the benefits of the project *equally* is the source of frustration among these hydrocrats.[15]

However, a member of the Nepali delegation for the 1996 Mahakali Agreement pointed out that the catchment area of a river depends on the source of the river, and since the source of the Mahakali is bitterly contested by both countries, it is not possible to claim that 80% of the catchment area is within India.[16] One former joint secretary at the Ministry of Energy, Water Resources and Irrigation, Government of Nepal, argues that if a similar logic is applied, then 100% of the catchment area of Koshi and Gandak rivers lies within Nepal, and 'despite this, India has constructed barrages at the India–Nepal border' and consumes '90–95% of the water'.[17] India is not entitled to 'a drop of water' from these rivers in such a case, the official asserts.[18] The catchment area of some South Asian rivers is in China; such logic would be dangerous for India, the official added.

Prior use versus equitable use: lower Sarada barrage

For the Indian side, the Pancheshwar and SKSK projects are crucial for building surface water irrigation infrastructure in the Gangetic plain. The Pancheshwar project, for instance, aims to ensure year-round irrigation of land under the Sharada command (1.61 million ha) by providing water in the dry season (WAPCOS, 2017). However, questions have been asked about the economic value of this augmented flow during the

dry season since agricultural productivity remains low in the Ganges basin, and water is not seen as a constraint to this low productivity (World Bank, 2014). According to the World Bank (2014, p. 14), agricultural productivity in the basin can be increased through policy reforms, modernization and changes in farming practices. Additional water may be a 'welcome resource for some communities', but upstream dams alone would not be able to modernize agriculture in the Gangetic plain and require 'national-level investments and policy reforms'. The report suggests that better groundwater utilization and water storage in underground aquifers could be a more sustainable alternative to upstream storage dams (such as Pancheshwar and SKSK). Nevertheless, successive Indian governments have seen the low agricultural productivity as a problem that can be addressed by providing water in the dry season by storing them in dams instead of the long-drawn and politically inconvenient process of reforming and modernizing agriculture. In this context, water from the Mahakali River is proposed to provide year-round irrigation in the Sarada command.

The annual water availability in the Mahakali is estimated to be around 18.35 BCM. Of this, 11.86 BCM is being used by India currently in the existing irrigation projects in the Sarada basin. Nepal uses 0.98 BCM of water from the Upper Sarada barrage. The balance of the water is unused and passes off as floods into the sea, having traversed the breadth of India. Of the 11.86 BCM of water used annually by India, roughly 7 BCM/year is drawn from the Upper Sarada barrage and 5 BCM from the lower Sarada barrage that lies 160 km into the Indian side of the Indo-Nepal border. According to the plans prepared by WAPCOS,[19] once the project comes up, of the unused water (5.51 BCM), Nepal will be entitled to get 3.011 BCM of water, and India would be entitled to 1.90 BCM. These plans are unacceptable to the Nepali hydrocrats, who believe that the 5 BCM of water that India is using at the lower Sarada barrage resulted from unilateral construction by India and that the barrage has no status in the Mahakali Treaty.[20] A former Nepali water resources minister and a retired joint secretary at the Ministry of Energy, Water Resources and Irrigation, Government of Nepal, assert that once the project comes up, India cannot claim rights over the 5 BCM of water it uses at the lower Sarada barrage as existing consumptive use.[21] Nepali officials state that once the project is built, India can *rightfully* take the 5 BCM of water at the lower Sarada barrage (something India does currently anyway), and Nepal should be entitled to the entire 5.51 BCM (that currently flows into the sea).[22] This would take Nepal's share of water from 0.98 BCM to 6.49 BCM (0.98 BCM that it currently draws plus the 5.51 that will be available after the dam comes up).[23] While India's share would remain at 11.86 BCM.[24] The claims of both sides, along with current usage, are illustrated in Figure 4. The claims of existing usage foreclosing water utilization by upstream states have been a bone of contention among states sharing rivers (Salman, 2010, 2015).

Hydrocrats from the Central Water Commission, Delhi, insist that they have been using the water flowing from Nepal into the lower Sarada barrage to irrigate 1.61 million ha of land on the Gangetic plain since the 1970s, and to now rescind such usage would nullify the water benefits that Pancheshwar will provide India. A former member of the Pancheshwar Development Authority remarked that after Pancheshwar is built, 'India will only augment the supply of water during the dry season to areas that are already irrigated using the existing canal network'.[25] Engineers at the Central Water Commission and their counterparts in Nepal's Water and Energy Commission Secretariat noted that the Indian side wants any

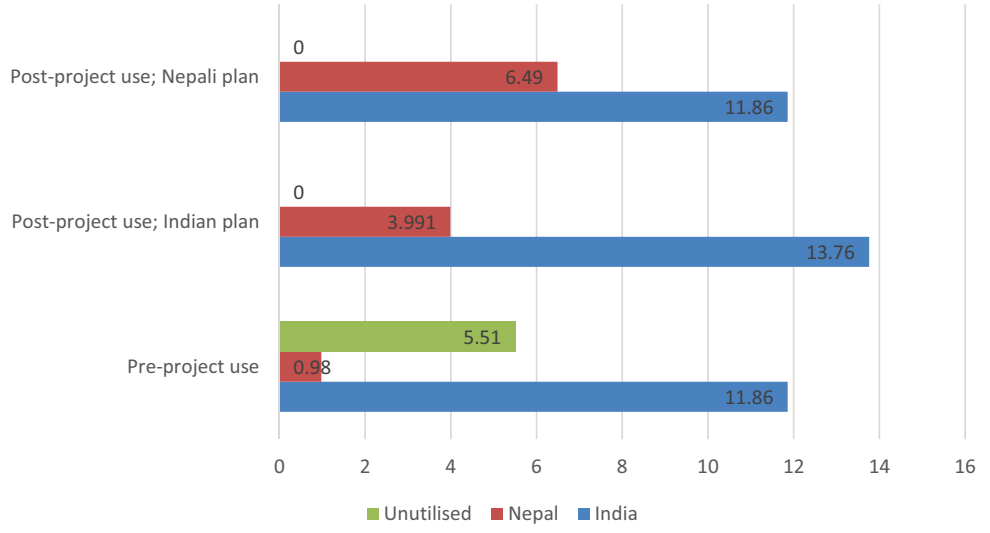

Figure 4. Using the Mahakali River.
Source: Data collected by author in Kathmandu using interviews.

calculation on water-sharing should recognize that the five BCM of water it receives at lower Sarada should continue to be calculated as 'pre-project use' (or prior use) and should be earmarked for India.[26] Officials in the Central Water Commission insist that Nepal should use the Mahakali River as much as possible and leave the rest flowing into India. In other words, India has rights over any unused portion of water from Mahakali.[27]

Such an assertion from Indian negotiators is opposed by Nepali hydrocracy which believes that such prior use stricture forecloses Nepal's options of receiving an additional volume of water. According to a former water resources minister in the Nepali government, the claim of prior rights over 5 BCM of water received at the lower Sarada barrage is dubious since, according to him, the water from Mahakali dries up in the dry season and is not enough to irrigate the command area.[28] There is also a belief among the Nepali hydrocracy that once the project comes up, the volume of water at the lower Sarada barrage will decrease enormously (owing to the changed flow of the river), and hence India cannot claim the same amount of water it is currently withdrawing.[29] Indian engineers and policymakers believe the rationale behind Nepal's firm stance on the *equal entitlement* of water (as opposed to an *equitable* share of water) – despite their limited domestic need – is an attempt to 'monetize' the water flowing into India from the river.[30] This monetization would mean India paying Nepal for allowing the water to flow into India naturally. According to data available from the World Bank, Nepal's annual freshwater withdrawal stands at 9.5 BCM as of 2018 compared with India's 647.5 BCM the same year (AQUASTAT, n.d.).

Equal versus equitable entitlement

Article III of the Mahakali Treaty states that 'both the parties agree that they have *equal entitlement* in the utilisation of the waters of the Mahakali River *without prejudice to their*

respective existing consumptive uses of the waters of the Mahakali River' (Mahakali Treaty, 1996). But as one former joint secretary in the Ministry of Energy, Water Resources and Irrigation, Government of Nepal, put it, the 'equal entitlement' has no meaning since it is not clear if the equal entitlement to water is before the project or after the project.[31] Blaming wily Indian negotiators, a senior Nepali bureaucrat remarked that equal entitlement has no meaning since Nepal cannot hold its share of water for even a month[32] or transfer the water elsewhere. This means that water flows into India by default. The inability of Nepal to absorb such a large volume of water, due to its smaller geography and lesser irrigable land, is a fact well known to the Indian negotiators; and something that they are too happy to exploit by insisting on *sharing water not benefits*.[33]

The 'equal entitlement' of water and respecting the 'existing consumptive uses' of the water were further reiterated in an exchange of letters between the two countries' foreign ministers (the Lohani–Mukherjee exchange of letters) in 1996. Clause 3 of the letter emphasizes that Article III of the Mahakali Treaty 'precludes the claim, in any form, by either party on the unutilised portion of the shares of the waters of the Mahakali River of that Party without affecting the provision of the withdrawal of the respective shares of the waters of the Mahakali River by each party under this Treaty' (Dhungel, 2009, p. 58). In other words, neither India nor Nepal can claim rights over the unused portion of the Mahakali River without affecting the other. According to some Nepali scholars, this clause prevents Nepal from claiming financial benefits from its equal entitlement to the waters if Nepal fails to use this water within its territory and allows it to flow downstream (Gyawali & Dixit, 1999, pp. 19–20). However, even if Nepal cannot use its share of water, it can trade it or exchange it for something else, a former water resources minister in the Nepali government remarked. Indian hydrocrats see this assertion of exchanging its share of water for something else as a ploy by Nepal to monetize shared waters.

There is a belief among Nepali elites that the treaty was ramrodded through Nepali Parliament without adequate discussion despite a two-thirds majority (Gyawali & Dixit, 1999). The members of the Nepali negotiating team later regretted the addition of Article III of the treaty, with a member of the team ruminating whether Parliament should have stood by the treaty or accepted the lapse of judgement and called for re-negotiation (Dhungel, 2009). Rather than the two options, the Nepali Parliament ratified the treaty in September 1996 with a stricture binding on the Nepali government. The elements of the stricture were:

- Nepal's electricity to be bought by India will be sold as per the 'avoided cost' principle.[34]
- When the Mahakali Commission is constituted it will be done only upon agreement with the main opposition party in Parliament and parties recognized as national parties.
- 'Equal entitlement in the utilisation of the waters of the Mahakali River without prejudice to their respective existing consumptive uses of the Mahakali River' means equal rights to all the waters of the Mahakali.
- Saying that 'Mahakali is a boundary river on major stretches between the two countries' is the same as saying it is 'basically a border river' (Dhungel & Pun, 2009, pp. 412–13).

This stricture precludes any Nepali government from going ahead on the Pancheshwar Dam without an agreement on equal entitlement on the Mahakali River even if Nepal cannot use this water for its domestic use.

Downstream benefits

The large dams planned on the Mahakali and Koshi rivers will – along with generating electricity – also provide water for irrigation during the dry season (temporal and spatial transfer of water), provide some ability to manage flood peaks, assist in the interlinking of Indian rivers, and build inland waterways in India. The Nepali hydrocracy is united in its belief that Indian negotiators have been dishonest about its real intention behind these projects: lean season augmentation of water for irrigation and not hydroelectricity or flood control. As a strategy to reduce their share of cost towards the project, Indian negotiators do not acknowledge the downstream benefits of the Pancheshwar and SKSK projects.[35] The Pancheshwar environmental impact assessment too asserts that the project is 'primarily aimed at energy production' (WAPCOS, 2017, p. 01). Conversation during negotiations on Pancheshwar revolved around hydroelectricity and how this energy will be shared and traded.[36] However, as a former water resources minister in the Nepali government said, Indian interests are not electricity but water. During the critical dry season (December–May), Nepal's glacial-fed Himalayan rivers contribute 70% of the Ganges water (Khadka, 2019). The Ganges basin is home to 37% of India's population (Sharma, 1997). One retired director of the Nepal Electricity Authority remarked that India's most significant problem in the Ganges basin is water during the dry season (not hydroelectricity as Indian negotiators often assert).[37] Another explanation is that the 2500 MW of electricity that will be each state's share from Pancheshwar is a 'trickle' for India, and Indian hydrocrats would not spend so much time and political capital on electricity.[38] India's real interest lies in seeing the water of Mahakali stored and augmented during the lean season for various downstream services.[39]

Nepali hydrocrats who were part of the negotiating team also pointed out that Indian negotiators have been downplaying its flood control benefits. According to the Pancheshwar Detailed Project Report (DPR) prepared by the Indian side, 'since no dedicated storage is proposed for flood control, benefits on account of reduced floods are *incidental*' (WAPCOS, 2017). The DPR prepared by WAPCOS[40] states that the flood control benefits to India and Nepal once the project is developed are estimated at INR 740 million and INR 160 million, respectively, at the 2015 price level (WAPCOS, 2017). Nepali officials believe Indian consultants at WAPCOS have discounted the flood control benefits that it will receive to reduce its share of the project cost.[41] Such an approach will hinder progress on the SKSK project as well once an agreement on the project is reached, according to one former joint secretary in Nepal's Ministry of Energy, Water Resources and Irrigation. Furthermore, India's reluctance to divulge details of the Sarada–Yamuna River link is a testimony to its overlooking of the downstream benefits of multipurpose projects on shared rivers.[42] The Sarada–Yamuna link is part of the Pancheshwar project (Figure 1) and an important component of the interlinking of Indian rivers that depends on storing water in reservoirs upstream in Nepal.

The principle of equal entitlement is problematic since neither Nepal has use for such large volumes of water as confessed by sections of Nepali society (and evident from World Bank Data),[43] nor does it have the infrastructure to store this water. Nepali negotiators, aware of the value of freshwater that flows into India from its territory, are convinced that Nepal deserves compensation for allowing *its water* to flow into India uninterrupted. With larger reservoirs that will store and release water during the lean season to drier parts of India, the value of this water further increased. Insisting on equal entitlement to water may well be Nepali officials' negotiation approach to compel their Indian counterparts to share benefits.

Conclusions

This paper used the case study of multipurpose reservoirs in the Mahakali and Koshi basins to be built jointly by India and Nepal to show how the inadequacies of international water laws manifest themselves in bilateral negotiations on water governance. The varying and self-serving interpretations of international water law, particularly the UNWC, hinder meaningful cooperation on the governance of shared rivers. Even though the UNWC does not explicitly mention benefit-sharing, this paper has tried to locate the principles that can assist in equitable sharing and utilization of water (Articles V, VI and VII). However, the use of various provisions of the UNWC as leverage during negotiations by both upstream and downstream states has only managed to convolute the negotiations and exposed the fissures within some provisions of the watercourses convention.

Equality dilemma

The principles of equitable and reasonable utilization of water are prone to misinterpretation by states to suit their own needs as the sections above show. Upstream states may construe equitable utilization of water as an equal entitlement to water as in the case of Nepal in the Mahakali River basin. Nepali negotiators' demands of equal entitlement to the water of the Mahakali (Figure 4) despite its limited domestic needs (see above) or even its inability to hold onto the quantity of water (lack of large reservoirs in Nepal) has led to Indian negotiators' accusations of monetization of water by upstream Nepal. International water law emphasizes equitable utilization of water. However, what this equity means is open to interpretation. The factors relevant to equitable and reasonable utilization[44] attempt to provide a framework for calculating equity but fall short of clarifying that benefit-sharing ought to move beyond traditional water sharing or water allocation. Definitive provisions on calculating equitable benefit-sharing in international laws would have made negotiations between India and Nepal less hostile. The longstanding weakness of UNWC and Berlin Rules on the conflict between Articles V and VI on 'equitable and reasonable utilisation and participation' and Article VII on 'obligation not to cause significant harm' continues to cause confusion on the status of the lower Sarada barrage.

Prior rights versus equitable rights

Another hurdle to the application of reasonable and equitable rights of the utilization of watercourses is the claim of states of existing/prior rights over the use of water and the

debate over which takes precedence over the other – reasonable and equitable use or the obligation not to cause significant harm (prior use rights). Nepali hydrocrats argue that Indian policymakers' claim of prior rights over the water of Mahakali at Lower Sarada is unfair and unjust. As a response to this claim, the Nepali Parliament passed strictures that have added another level of complexity.

Point 3 of the Nepali Parliamentary strictures asserts Nepal's *equal* rights to *all* the water of the Mahakali (emphasis added). This assertion of equal rights over all the water is in direct contention with Article III of the Mahakali Treaty which declares that the equal entitlement in the utilization of the Mahakali River should be 'without prejudice to their respective existing consumptive uses of the Mahakali River' (Mahakali Treaty, 1996, p. 03). This means that both India and Nepal agree not to claim any share of water that the other has been utilizing before the signing of the treaty. This conflict between the treaty and what the Nepali Parliament declared has led to a deadlock. Any attempts to progress on the Pancheshwar project would mean amendment of the strictures (if not outright nullification). The history of mistrust between India and Nepal on shared rivers makes it politically inexpedient for Nepali political leadership to amend or ignore the Parliamentary strictures.

At the same time, when it comes to claiming prior rights over the water of Mahakali on account of using it for decades, it is important to refer to a letter written by former Indian Prime Minister Jawaharlal Nehru to Pakistani President Ayub Khan in which he contested Pakistan's (the lower riparian to India) rights to 'proceed unilaterally with projects, while the upper riparian [India] should not be free to do so' (Crow et al., 1995, p. 89). The Indian Prime Minister warned that unilateral construction by Pakistan would 'enable the lower riparian to create, unilaterally, historic rights in its favour and go on inflating them at its discretion, thereby completely blocking all development and uses of the upper riparian' (p. 89). India, being an upper riparian to Pakistan on the Indus Basin, clearly stated its opposition to unilateral action by a downstream state that would enable the latter to claim historical rights (or prior rights/existing rights) and foreclose the options of the upper riparian state. Nevertheless, when it comes to Nepal, Indian officials have been staunch in claiming five BCM of water from the lower Sarada barrage due to its historic rights and prior usage principle.

Benefit-sharing versus water-sharing

A lasting legacy of international water law has been the debate on the meaning of benefits sharing. Downstream states prefer to see it as the classic apportionment of the volume of water. This problem has been observed in various basins. The Kariba Dam and the Lesotho Highland Water Project (on the River Senqu–Orange) are similar in terms of the location of dams to the Pancheshwar and SKSK projects, respectively. The Kariba Dam and Pancheshwar Dams are on a border river and the Lesotho Highland Water Project and SKSK dams are in the upstream state. The problems faced during negotiations over Kariba Dam by Zambia and Zimbabwe and over Lesotho Highland Water Project by South Africa and Lesotho are similar to the ones India and Nepal face currently. The difference is that states living in Kariba and Senqu–Orange basins did not let fractious negotiations get in the way of realizing their projects.

In the context of the Mahakali basin, Indian officials from the Central Water Commission claim that the Nepali side can and should utilize all the waters it can from

its rivers but leave the rest flowing into India once the Pancheshwar dam comes up. In other words, these officials insist on equitable sharing of water, not benefits. This is problematic since the principle of equitable utilization mandates states to go beyond the 'classic apportionment' of water to share benefits accrued from such projects (Tarlock & Wouters, 2007, p. 527). Some scholars have argued that some uses of water are more valuable than others and the objective of efficient utilization requires water to be allocated to the most valuable use (Tarlock & Wouters, 2007). If this means that some states may have to forego the actual use of water, they must be entitled to compensation from the other riparian states for allowing the water to go to its most efficient use. This compensation may be monetary or a share of the project's benefits. In other words, paying the riparian for their ecological services. Perhaps it is time for water law to clarify once and for all that the principle of benefit-sharing goes beyond the sharing of water to include project benefits. This could assist weaker riparians to counter any hegemonic attempts.

Downstream benefits

Indian negotiators' reluctance to acknowledge its downstream benefits and obfuscate its real intentions behind Pancheshwar and SKSK, that is, storing water for lean season augmentation, gives credibility to Nepali negotiators' charges of India's unfair and opaque negotiations. It also highlights the difficulty of calculating benefits. For equitable development of transboundary water resources, it is imperative for states to be honest and transparent. The lack of a framework or procedure under water laws makes it easier for stronger riparians to apply their hegemony. To be fair, the 'relevant factors' under UNWC and/or Berlin Rules describe how drainage areas and the contribution of water determine the share of the benefits. However, in the India–Nepal case, the territorial disputes over the source of the river hinder cooperation.

The way ahead

As states turn to large dams over shared rivers to address the impacts of climate change, there is an opportunity for international water law to not only ensure the application of reasonable and equitable use of water resources, and to engage with the difficult questions of benefit-sharing between states, but also address power equations on basins. In particular, it could assist the weaker riparians in resisting hydro-hegemony. This would ensure a less conflictual future of transboundary water resource governance.

For policymakers in India, as one former Indian Ambassador to Nepal put it, projects like the Pancheshwar dams and SKSK dams are 'strategic' in nature since they have transformational impacts.[45] In the case of the Pancheshwar dams, it is touted to transform the agro-economy along the Ganges plain. Indian officials should then override tricky negotiations by being munificent with neighbours.

This paper has discussed how the inadequacies and incongruities of international water laws manifest themselves in bilateral negotiations on water governance between India and Nepal. It has located the role of international water laws in transboundary disputes and how the varying interpretations of water laws affect the governance of projects on shared rivers.

Notes

1. See the special issue on 'Power in Water Diplomacy', *Water International* (2020).
2. Personal communication with a Nepali scholar, 6 March 2021.
3. An independent body constituted in 2014 with members from both sides and tasked with finalizing the DPR and expediting the implementation of the project.
4. NVIVO (word play on the Latin term 'in vivo' meaning 'within a living organism') is a collaborative qualitative analysis software that allows researchers to connect and collaborate on their data.
5. Owing to the nature of the research questions, an overtly interpretative approach to finding latent meanings was avoided. For more, see Braun and Clarke (2006).
6. Formally known as the Helsinki Rules on the Uses of the Waters of International Rivers and succeeded by the Berlin Rules on Water Resources in 2004. Neither Helsinki Rules nor Berlin Rules differs from conventions or treaties and have no legal binding. However, they reflect customary principles.
7. UNWC, Berlin Rules or Helsinki Rules.
8. Articles V and VI in the UNWC; Articles IV and V in the Helsinki Rules; and Articles XII and XIII in Berlin Rules.
9. Article VII in the UNWC; and Article XVI in the Berlin Rules.
10. As we will see in this paper over the status of the Lower Sharada Barrage.
11. Benefit-sharing here is in the context of transboundary water resources. In different contexts, benefit-sharing means something else. For instance, in the case of mining natural resources, it could mean sharing benefits with the local community that has been uprooted from their lands in the form of compensations, monetary or otherwise.
12. Personal communication with retired and serving members of the Nepali civil service.
13. Personal communication with current and retired members of the Indian civil service who work on hydropower development and governance, irrigation management, and flood control.
14. According to the Detailed Project Report, of the 116 km^2 of land that will be submerged from Pancheshwar, 76 km^2 lie in India and the rest in Nepal. A total of 123 'revenue villages' lie in India, while 25 village development committees lie in Nepal. Similarly, the project will affect 31,023 families in India and 2786 families in Nepal.
15. Personal communication with serving and retired bureaucrats in the Ministry of Jal Shakti, Central Water Commission, and Pancheshwar Development Authority.
16. Personal communication with a member of the Nepali team that negotiated the Mahakali Treaty in 1996, 18 April 2021.
17. Personal communication with a former joint secretary at the Ministry of Energy, Water Resources and Irrigation, Government of Nepal, 15 March 2021.
18. Personal communication with a former joint secretary at the Ministry of Energy, Water Resources and Irrigation, Government of Nepal, 15 March 2021.
19. Water and Power Consultancy Services (WAPCOS), an Indian state-owned consultancy organization.
20. Personal communication with a former water resources minister in the Nepali government, 29 November 2020.
21. Personal communication with a former water resources minister in the Nepali government and a former joint secretary at the Ministry of Energy, Water Resources and Irrigation, Government of Nepal, 29 November 2020 and 15 March 2021.
22. Personal communication with a former water resources minister in the Nepali government and a former joint secretary at the Ministry of Energy, Water Resources and Irrigation, Government of Nepal, 29 November 2020 and 15 March 2021.
23. Personal communication with chief engineers in the Central Water Commission, Delhi; serving and retired bureaucrats, Water and Energy Commission Secretariat, Kathmandu.
24. A total of 7 BCM from upper Sharda plus 5 BCM from lower Sharda.

25. Personal communication with a former member of the Pancheshwar Development Authority, 21 July 2021.
26. Personal communication with chief engineers in Central Water Commission, Delhi; serving and retired bureaucrats, Water and Energy Commission Secretariat, Kathmandu.
27. Personal communication with senior bureaucrats in the Central Water Commission, Delhi, and Pancheshwar Development Authority, Delhi, 12 December 2020.
28. Interview with a former water resources minister in the Government of Nepal, 29 November 2020.
29. Interview with a senior member of the Water and Energy Commission Secretariat, Government of Nepal, 10 March 2021.
30. Interview with engineers and bureaucrats in the Central Water Commission, Delhi; and Ministry of Jal Shakti, Delhi.
31. Personal communication with a former joint secretary at the Ministry of Energy, Water Resources and Irrigation, Government of Nepal, 15 March 2021.
32. For the lack of storage reservoirs.
33. Evident also from the Indian stance on letting Nepal 'use as much water as it can' and leave the rest for India. A consensus among Nepali elites as reflected in the interviews.
34. Here avoided cost would mean the purported costs towards the rehabilitation of people after a flood, the revenue forgone due to poor irrigation network, and generally the expenses incurred due to non-development of the Pancheshwar project.
35. A consensus among Nepali elites as reflected in the interviews.
36. Personal communication with a member of the 1996 Nepali team that negotiated the Mahakali Treaty, 16 April 2021.
37. Personal communication with former director of the Nepal Electricity Authority, 25 July 2020.
38. Personal communication with an energy expert, 8 September 2020.
39. Interview with a senior member of the Water and Energy Commission Secretariat, 10 March 2021.
40. Water and Power Consultancy Services, Indian state-owned consultancy organization.
41. Interviews with Nepali hydrocrats, 10 and 25 March, 1 and 13 April 2021.
42. Interviews with Indian bureaucrats in the Central Water Commission (2021).
43. Personal communication with former joint secretary, Ministry of Energy, Water Resources and Irrigation, Government of Nepal, 15 March 2021.
44. See Article VI of the UNWC, Article V of the Helsinki Rules and Article XIII of the Berlin Rules.
45. Personal communication, former Indian Ambassador to Nepal, 9 October 2020.

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Appendix A

Table A1. Organizations and locations in India and Nepal.

Organization	Location
Central Electricity Authority	Delhi
Central Water Commission	Delhi
National Water Development Agency	Delhi
Ministry of Jal Shakti	Delhi
Ministry of Power	Delhi
Ministry of New and Renewable Energy	Delhi
Ministry of External Affairs	Delhi
Ministry of Agriculture	Delhi
Ganga Flood Control Commission	Delhi
Water and Energy Commission Secretariat	Kathmandu
Ministry of Energy, Water Resources, and Irrigation	Kathmandu
Nepal Electricity Authority	Kathmandu
SaptaKoshi–Sun Koshi Joint Project Office	Kathmandu
Water Resources Research and Development Center	Kathmandu
National Planning Commission	Kathmandu
Department of Electricity Development	Kathmandu
Jalsrot Vikas Sanstha	Kathmandu
Satluj Jal Vidyut Nigam	Kathmandu