

Nepal–India water cooperation: consequences of mutuality or hegemony?

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Abstract

This article reviews the relationship between Nepal and India, particularly in water resources cooperation. The two South Asian neighbours have entered into a number of agreements/treaties in water resources, namely, Sarada Agreement (1920), Kosi Agreement (1954), Gandak Agreement (1959) and Mahakali Treaty (1996). Nepal is criticized within the country for being unable to secure its benefits, and that all the agreements are in India's favour. However, the Indian side claims that overpoliticization of water issues in Nepal is the reason for not achieving the benefits from these agreements. Since the Mahakali Treaty, there has been deadlock in Nepal–India water cooperation as the implementation of the treaty has not materialized even after more than two decades since its ratification. Therefore, all the forms of cooperation in the past between Nepal and India can be viewed as the consequence of hydro-hegemony rather than mutuality. The article concludes that both nations need to move forward to create mutual trust for the equitable utilization of water resources, as there is huge potential for constructive cooperation.

Keywords: Cooperation; Hydro-hegemony; Nepal–India water relationship; Transboundary water; Utilization

Highlights

- Nepal and India have a long history of water relationship with lapses in cooperation in the past.
- The cooperations between the two nations is due to hydro-hegemony, rather than mutual interest.
- Adoption of internationally accepted principles for sharing transboundary water would strengthen mutual cooperation.

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doi: 10.2166/wp.2020.135

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Introduction

Nepal is a small landlocked country in South Asia surrounded by India in the east, south, and west and China in the north. All the rivers of Nepal, including those originating from Tibet, drain to India through Bangladesh to join the Bay of Bengal. The water of Nepal is so important that while occupying only 14.72% area of the Ganges basin, it supplies about 38.1% of its water (Poudel, 2009). However, there are many issues, mainly about flood and inundations, between Nepal and India in border areas, which mostly rise to the surface every year during the monsoon season. Nepal blames India for inundating the Nepalese territory, constructing barrages, roads and embankments near to the international boundary that adversely affects the natural flow of rivers (Dhungel, 2009; Shrestha, 2009), against the international principles. Similarly, Indian states, occasionally, blame Nepal for floods in their territory (Mishra, 2008; Dhungel *et al.*, 2009). Likewise, the irrigation issues are often raised by the Nepalese side, especially those related to the barrages built through the agreements. However, this article is mainly focused on the review of benefits shared by the two nations through the treaties/agreements and the controversies in their implementations, to analyse whether these agreements are the result of mutual interest or Indian hegemony.

Since the beginning of the 20th century, Nepal and India have signed several agreements for the utilization and control of transboundary water. However, Nepal is criticized within the country, for being unable to secure its benefits in all these agreements/treaties (Iyer, 1999; Dhungel, 2009), and India being superior in economy and exploitation capacity, getting control over the transboundary rivers (Upadhyay, 2009), resulting in the persisting dissatisfaction about the sharing of water resources between the two riparian countries (Adhikari, *et al.*, 2015). Therefore, the issue of water resources has always received due prominence on the agenda of bilateral meetings between Nepal and India (MoFA, 2019). However, the Indian side claims that overpoliticization of water issues in Nepal is the reason for not achieving the benefits from these agreements (Iyer, 1999).

Nepal–India water relationship

The relationship between the two South Asian neighbours, Nepal and India, especially in water resources, exists both at people-to-people and official levels. The people-to-people relationship is based on the pilgrimages lying on the bank of Hindu Holy River Ganga and its tributaries both in Nepal and India, whereas the official level engagement was initiated during the time of British India. A letter of 1874, addressed by British India to the Government of Nepal (GoN) during the time of Prime Minister Jung Bahadur Rana, in relation to three Sagars (ponds) located on the international border in present-day Kapilavastu, could be considered as the first official correspondence between the two countries (Dhungel, 2009). Since then, the two neighbours have entered into a number of agreements/treaties, beginning in 1920 when letters were exchanged to construct Sarada Barrage in Mahakali River. Similarly, the Kosi Agreement in 1954, Gandak Agreement in 1959, Tanakpur MoU in 1991 and Mahakali Treaty in 1996 were signed with many sweet and bitter experiences in various political contexts, especially in Nepal. The hydro-structures built as per these agreements can be seen in Figure 1.

Sarada Agreement

Letters were exchanged between Nepal and British India in 1920 to construct a barrage in Mahakali River at Banbasa for irrigation mainly in India and some parts of Nepal, after four years of discussion.

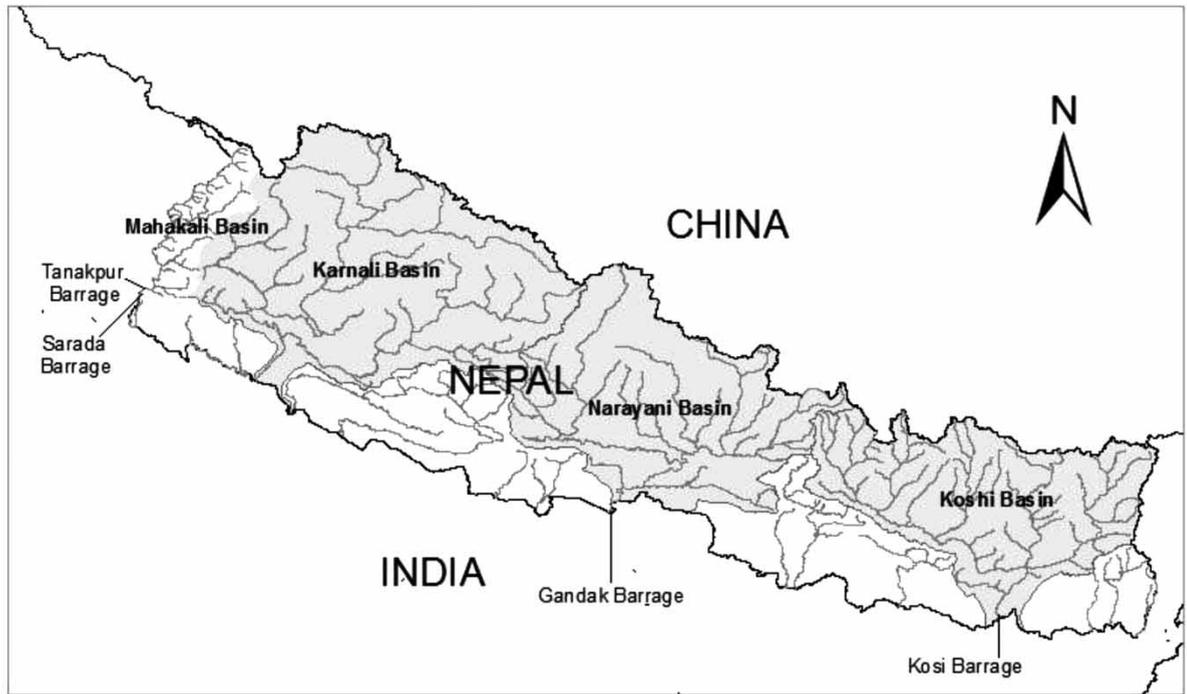


Fig. 1. Major river basins of Nepal and the hydro-structures in the vicinity of the international boundary (GoN/Department of Survey, 2020).

As per the letters, Nepal was to receive up to 1,000 cusecs of water from the barrage, during the summer season from May 15 to October 15, and 150 cusecs during the winter season for irrigation. However, Nepal was able to make complete use of its share of water only when the Mahakali Irrigation Project built with World Bank assistance, started in 1971 (Gyawali & Dixit, 1999), was completed in 1997/98 (Pun, 2006).

Kosi Agreement

The Kosi Agreement was signed in 1954 (later amended on December 19, 1966) to construct a barrage three miles upstream of Hanuman Nagar, which was primarily meant to control the massive floods and devastation in Bihar. It is unconventional to witness a diversion structure having no storage capacity at all being proposed for controlling floods. The associated dikes control floods to some extent, but they are basically for controlling the vagaries of the river. Dixit (2009) has indicated the barrage and embankment to control floods in Kosi as an inappropriate choice of technology and there was a century-long debate against embanking the river during the British period (Mishra, 2008). Highlighting the flood control objective and not mentioning irrigation coverage in India in the Agreement were perhaps to avoid members of the public in Nepal not supporting against the Agreement. The Agreement does not state anything about the total area (in both Nepal and India) that would be irrigated from the Kosi Barrage nor does it say anything about the quantum of hydroelectric power to be generated from it. To enable the

construction and maintenance of the barrage and other structures, the Agreement required Nepal to give permission to quarry the construction materials at various places inside the country on the payment of royalties agreed upon by the two governments. Unlike the letters exchanged between the two countries for construction of the Sarada Barrage, the Kosi Agreement had no provision for providing water to Nepal for irrigation purposes. The provisions related to the sovereignty of the country/lease of the project area, freedom in the inter-basin diversion upstream, use of water and power, navigational rights, fishing rights, etc. were addressed by amendment of the Agreement in 1966. Along with some irrigation facilities from the west canal, since 1970, Sunsari-Morang Irrigation Project has been operational for irrigation in Nepal, but the irrigation supply remains unsatisfactory (ISET Nepal, 2015). Similarly, the people displaced by the construction of the barrage are deprived of proper financial compensation, which India was obliged to pay as per the agreement (Pathak, 2008).

Gandak Agreement

The Gandak Agreement signed between Nepal and India in 1959 (amended on April 30, 1964) permitted the latter to build a barrage on the Gandak River at Bhaisalotan (Balmiki Nagar) for the purposes of irrigation in both nations and the construction of a hydroelectric power plant. The Agreement, unlike the Kosi Agreement, contains detailed descriptions of the irrigation facilities to be provided from the project to Nepal, and construction of a powerhouse with an installed capacity of 15,000 kW in the Nepalese territory on the main western canal for the supply of electricity to both nations. However, the agreement does not state anything about the irrigation benefits that India would receive from the project. The amendment of the Gandak Agreement has addressed provisions like protection of Nepal's riparian rights, reduction of supplies during periods of shortage, etc. However, the benefits of the Gandak Project are far less than anticipated due to less availability of irrigation water, involuntarily displaced people not yet compensated, increasing sand deposition and bank erosion (Dixit & Shukla, 2017). The promise made to maintain sill level has not been kept at the Gandak Barrage, and Nepal never received the specified quantity of water from the barrage (Pun, 2009).

Mahakali Treaty

The Mahakali Treaty was signed between Nepal and India in 1996, and included Sarada Barrage, Tanakpur Barrage and Pancheshwar Multipurpose Project. It was ratified by more than a two-thirds majority of the Nepalese parliament, amidst strong disapproval from many parliamentarians (Thapa, 2017). The instrument of ratification was exchanged during the visit of the Prime Minister of India to Nepal on June 4, 1997, and the agreement entered into force from 5 June 1997, for the life of 75 years, with provisions for review after every ten years.

The Treaty ensured Nepal the amount of water from Sarada Barrage as mentioned in the Sarada Agreement. It reaffirmed the Nepalese sovereignty, on Tanakpur, over 2.9 ha land needed for building the eastern afflux bund as well as the 9 ha of pondage area, for the unilaterally constructed hydroelectric power plant of India with 120 MW capacity. In lieu of this, the Treaty gave Nepal the right to 28.3 m³/s (1,000 cusecs) of water in the wet season and 8.5 m³/s (300 cusecs) in the dry season; and 70 million KWh of electricity 'free of cost' against the earlier agreed figure of 20 million KWh from the Tanakpur facilities. The Mahakali Treaty also has a provision that the quantity of water from Sarada Barrage is to be supplied from the Tanakpur Barrage if the former becomes non-functional. The Tanakpur Barrage

was constructed, unilaterally by India in the 1980s, on her territory on a common border river, the Mahakali, as an ‘alternative’ to the ageing 1920 Sarada Barrage, to irrigate 1.61 million ha of land in India and for power production (Gyawali & Dixit, 1999). On 6 December 1991, a controversial agreement was signed between Nepal and India as a ‘memorandum of understanding’ which was hugely criticized by opponents in Nepal and, later, declared by the supreme court of Nepal as a ‘treaty’ and needing to be ratified from the parliament as per Article 126 of the then Constitution of Nepal. However, due to a lack of severe misunderstanding among the Nepalese political parties and within the parties, the treaty was unable to be ratified. Later the issue of the barrage was normalized, including it in the Mahakali Treaty and linking it to the high dam storage project of Pancheshwar.

India has diverted about 326 m³/s water from Sarada Barrage for irrigation, and hydropower is also generated with an installed capacity of 41 MW at Lohia head power plant (WAPCOS, 2016). In the Mahakali Treaty, the previous controversial agreements regarding the Mahakali River were also subsumed. As a consequence, the huge amount of irrigation water taken by India through the Sarada Canal is accepted as existing consumptive uses. It can be considered as one of the mistakes from Nepal, in the Mahakali Treaty, in the context that India has far greater historical exploitation of water resources than Nepal.

Pancheshwar Multipurpose Project (PMP), a joint/bi-national project, which was to be located on the Indo–Nepal boundary has some general principles applicable to transboundary rivers as stated in the treaty, ‘equal entitlement in the utilization of the waters of the Mahakali River without prejudice to their respective existing consumptive uses’. PMP has been identified as a huge storage scheme to be developed so as to maximize peak power benefit in the order of 5,040 MW (Pancheshwar High Dam 4,800 MW and Rupali Gad Re-regulating Dam 240 MW) with an annual average energy production of 11,885 GWh (WAPCOS, 2016). The cost of the project was agreed to be borne by both countries in proportion to the benefits accruing to them, and a proportion of Nepal’s share of energy shall be sold to India. When the project comes into being and augments the availability of water in the dry season at Tanakpur, Nepal would be provided with additional water and additional energy bearing a proportion of the cost of generation of incremental energy. Gyawali & Dixit (1999) pointed out that Pancheshwar was a dam that India had wanted all along for over two decades but for which Nepal had not shown much interest.

Now, the Treaty is in force and is in the implementation process. However, the implementation process has been too sluggish with no signs of making any headway. The Detailed Project Report (DPR), which was to be prepared in six months, has not been finalized even after more than two decades because of certain unresolved issues. This delay in the implementation of the Mahakali Treaty has created a deadlock in Nepal–India water cooperation (Bagale & Adhikari, 2020).

Recent developments

During the visit of the Prime Minister of Nepal to India in April 2018, both nations agreed on inland waterways connectivity between Nepal and India. The first bilateral meeting held on 15–16 July 2018 in Kathmandu decided to discuss the establishment of a bilateral institutional mechanism based on the assessment and inputs of technical scoping missions comprising officials of both nations, separately (WECS, 2018). Besides this, there is no evidence of any level of cooperation in water resources between the two close neighbours. However, some Indian government-owned companies are involved in hydro-power development in Nepal.

International principles of sharing transboundary water

Before the emergence of customary international law governing international watercourses in the 1950s, there were two conflicting approaches reflecting the claims and counter-claims of states over their share of transboundary resources (Rieu-Clarke, 2005; McCaffrey, 2007). These two approaches include the theory of absolute territorial sovereignty and the theory of absolute territorial integrity. The theory of absolute territorial sovereignty (also known as the Harmon Doctrine) favours upstream riparians, allowing the unlimited use of the waters of a transboundary watercourse located within national borders, regardless of any consequences that may occur downstream in other countries. The theory of absolute territorial integrity favours downstream states wishing to prohibit any development in an upstream state that would interfere with the natural flow of such a watercourse.

According to Rieu-Clarke *et al.* (2012), the theory of absolute territorial sovereignty emerged due to the dispute between the USA and Mexico over the Rio Grande River in 1895. In this case, Mexico claimed that diversions of water in the USA significantly reduced the water supply to Mexican communities. When a legal opinion was requested by the US Secretary of State to the US Attorney General, Judson Harmon, as to whether the United States violated Mexico's rights under international law, in his opinion, Harmon denied the general rules of international law imposed obligation on the United States to restrict its use within its own territory, even if this use might cause adverse effects downstream in Mexico. Attorney-General Harmon advised the Department of State that the USA had no responsibility towards Mexico for the significant reductions to the Rio Grande River. His opinion is commonly referenced by those who claim an upstream state has a right under international law to act unilaterally in complete freedom regarding an international watercourse within its territory, irrespective of any impact in downstream countries.

The concept of absolute territorial integrity is contrary to that of absolute territorial sovereignty since the former is employed to argue that the upstream state has no right to do anything which may affect the natural flow of the water into the territory of the downstream state(s). McCaffrey (2007) suggested that applying such a theory would most likely have a serious impact on upstream states which developed their water resources at a much slower pace compared to their downstream neighbours, as it would ultimately impede any upstream development, which may adversely affect the natural flow of the watercourse. Like the theory of absolute territorial sovereignty, the concept of absolute territorial integrity may only be useful as a diplomatic tool, rather than being reflective of state practice. Neither of these two extreme theories received universal support as watercourse states cannot be easily divided into upstream or downstream states as some rivers may end in a state's territory, while others may originate from it, likewise, other countries may be midstream states (Nardini *et al.*, 2008). In between the two extremities, there exist a few more cases, which are intermediate in nature. One of them is the concept of limited territorial sovereignty that is strongly reflected in the principle of equitable and reasonable utilization, which can now be considered as a principle of customary international law. Tanzi & Arcar (2001) claimed the concept of limited territorial sovereignty is more balanced and widely accepted. Rieu-Clarke *et al.* (2012) suggested the theory of allocation, as shown in Figure 2, to mention the concept of 'community of interest'. The concept of a community of interests can be viewed as a step beyond the theory of limited territorial sovereignty.

The Helsinki Rules on the Uses of the Waters of International Rivers adopted by the International Law Association (ILA) in August 1966 assert the rights of all bordering nations to an equitable share in the water resources, with reasonable consideration of past customary usages of the resource and balancing variant needs and demands of the bordering nations.

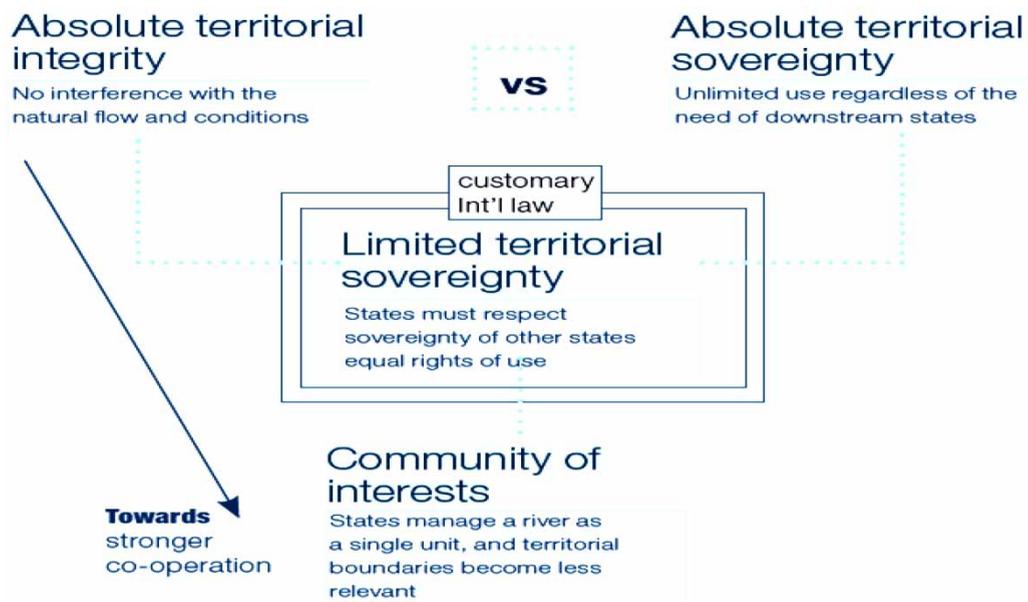


Fig. 2. Theory of allocation (Source: Rieu-Clarke *et al.*, 2012).

According to the Convention on the Non-Navigational Use of International Watercourses (UNCIW) adopted by the UN General Assembly on 21 May 1997, the general principles of sharing transboundary rivers include equitable and reasonable utilization and participation, obligation not to cause significant harm, general obligation to cooperate, regular exchange of data and information, and the relationship between different kinds of uses. UNCIW entered into force in August 2014, after being ratified by sufficient numbers of states. However, it is not binding to either Nepal or India as they have not yet become its parties. Therefore, Nepal being an upper riparian country, although favouring the theory of absolute territorial sovereignty, should not work to cause significant harm to the lower riparian. In the meantime, India being the lower riparian, claiming its right of historical use favouring the theory of absolute territorial integrity, should not obstruct the essential hydro-development in Nepal. Thus, working with a common interest for mutual benefits through equitable utilization will be compatible with the international principles.

Relevant practices of transboundary water sharing

There are many examples illustrating the international practices of transboundary water sharing. Columbia River Treaty, Mekong Agreement and Itaipu Treaty are the most relevant in the context of Nepal–India water cooperation.

Columbia River Treaty

The Columbia River Treaty is an international agreement between Canada and the United States of America signed in 1961, to coordinate flood control and optimize hydroelectric energy production in

both countries. The Treaty required Canada to build and operate three dams and allowed the USA to construct and operate a dam for flood control which shifts energy from low-value time periods to high-value time periods. Under the Treaty, the USA must deliver electric power to Canada equal to one-half the estimated USA power benefits, from the operation of Canadian storage. As the dams were completed, the USA paid Canada \$64.4 million for one-half the present worth of the expected future USA flood damages prevented from 1968 to 2024 (Hyde, 2010). This treaty is recognized for sharing the downstream benefits to Canada (the upper riparian) by the USA (the lower riparian).

From the reference of the Columbia Treaty, Nepal would get downstream benefits from India in compensation for the land lost due to the construction of barrages and downstream flood control. Further, India would promote the construction of storage projects in Nepal through benefits sharing, and for reducing flood and utilizing the augmented water for irrigation and domestic water supply.

Mekong Agreement

The Mekong Cooperation Framework Agreement was signed on 5 April 1995 by governments of its four-member countries, Cambodia, Laos, Thailand and Vietnam to establish an institutional framework for cooperation, the Mekong River Commission (MRC). It was the result of more than 40 years of regional and supra-regional efforts to manage the resources of the Mekong River Delta. The agreement's focus is on the sustainable development and management of the Mekong River Basin's water and related resources. Benefit-sharing through the 'equitable and reasonable utilization' of water resources is a cornerstone of this Agreement.

In contrast, the lack of trust of Nepal and Bangladesh with India has led to underdevelopment of water resources in this region (Biswas, 2011). This distrust is due to numerous historical grievances and, in part, to India's hydro-hegemony (Hanasz, 2017). Therefore, India and Nepal can work for regional cooperation in Ganga River Basin by considering neighbours like Bangladesh and China signifying mutual trust.

Itaipu Treaty

Itaipu Treaty between Paraguay and Brazil can be very much relevant while comparing with Nepal and India. In 1973, the tiny landlocked country of Paraguay and her large next-door neighbour Brazil, signed the Itaipu Treaty, to construct a hydropower plant on the border river, seven years after starting the negotiations. After the treaty was ratified, it made official the right of 50% consumption by each country of the installed capacity of 14 GW and the energy produced. Paraguay undertook to sell its surplus energy exclusively to Brazil at a fixed price until the review of the financial terms by 2025. When the voice of dissatisfaction arose from the people of Paraguay, the treaty of 1973 was renegotiated in 2009. Now, Paraguay is authorized to sell energy directly on the Brazilian market and 90% of the energy produced in Itaipu is supplied to Brazil (IHA, 2019).

It is well evidenced that the hydro-development in Nepal is mostly planned, based on energy trade/export to the Indian market, and it is also reflected in the agreements between the two nations. However, Pun (2010) underlined the fact that despite selling such an amount of energy for over two decades, Paraguay continues to be one of the poorest countries in Latin America. Therefore, the example from Itaipu suggests that trading Nepal's surplus energy to India may not be the ultimate idea for economic prosperity.

Discussion

From a geographical point of view, in general, the upstream states are considered to be in more influential positions as they can control the water sources. However, this is not always the case, as the regional power imbalance can also make it possible for the downstream riparian to exert influence over upstream states (WCD, 2000). Hydro-hegemony occurs when one state within a shared river basin asserts its power over another riparian (Sneddon, 2013). Zeitoun & Warner (2006) proposed the three-pillar approach of hydro-hegemony, (a) riparian position (upstream or downstream), (b) power (military, economic, etc.) and (c) exploitation potential (infrastructure and technology capacity). Hydro-hegemony may produce unfair outcomes; but it may also produce the stability that mitigates the prospect of water conflict, as the weaker party may choose to comply with the hegemony's direction for reasons other than its apparent or immediate best interest in the matter (Hanasz, 2014). Then, the control over water resources is not achieved through violence but rather consent, which is gained through a suite of often subtle mechanisms (Zeitoun *et al.*, 2011).

Hanasz (2014) states that the agreements India has with Nepal, though problematic, were entered into through consent, not coercion. However, Gaudel (2013) claims that India being a downstream riparian, with its regional power, has been exerting influence over Nepal's water resources. Therefore, Nepal is not able to secure its benefits in the agreements/treaties on water resources with India, as these were proposed by the latter for their interest and the former had accepted the proposal just by getting the 'by default' benefits. However, Jha (2013) states that the Kosi and Gandak projects are mutually beneficial to both the nations and the shortcomings may be due to the lack of experience on India's part. Iyer (1999) avowed that both these projects were conceived by India for their requirements, and some benefits for Nepal were included, but suffered from poor design, inefficient implementation and bad maintenance.

Upadhyay (2005) doubted whether cooperation between Nepal and India can be achieved in water resources at all, as there have been difficulties in the past. Similarly, Pun (2009) states that India has a strategy of act first and negotiate later to have control over the transboundary waters, whereas Nepal has not yet set any strategy. Therefore, all the forms of cooperation in the past between Nepal and India can be viewed as the consequence of hydro-hegemony rather than mutuality. As a result, there is anti-India sentiment in Nepalese people, mostly backed by the political forces.

Conclusion

The water relationship with India has become a very sensitive matter for Nepalese people, as there have been bad experiences in the past. This has resulted in limited hydro-development in this region. However, there is huge potential for cooperation between India and Nepal while employing water resources. Adoption of customary international principles of transboundary water sharing can be useful for achieving mutual benefits through water resources cooperation. Therefore, India being a larger economy, regional player and technically advanced, should come forward to gain the confidence of Nepal for proper and honest utilization of the water resources for the mutual benefit of both nations. Meanwhile, Nepal needs to build a common national perception of water resources utilization. Agreeing on the basic principles of cooperation, before entering into an agreement on a specific project, would be an appropriate approach for long-lasting Nepal–India cooperation.

Data availability statement

All relevant data are included in the paper or its Supplementary Information.

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Received 5 July 2020; accepted in revised form 4 September 2020. Available online 30 October 2020