

# **REVIEW OF THE INDUS WATERS KISHENGANGA ARBITRATION (FINAL AWARD) 2013:**

## **AN ECOLOGICAL PERSPECTIVE**

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### **ABSTRACT**

Damming and infrastructural development in international river basins is increasing worldwide. It is usually undertaken for economic gains, often overlooking environmental impact considerations. This occurs even when such developments are regulated through a treaty. The Indus river basin, which is governed by a little more than half a century old Indus Waters Treaty, is no exception. Whilst the Treaty has prescribed the Parties' rights and obligations with regard to dams and hydro-electric development, it has failed to ensure that such developments are balanced against environmental protection of the river basin. Thus, as India tries to increase its hydro-electric generation capacity, damming and infrastructural development-related disputes between India and Pakistan are increasing.

In view of the recent Indus Waters Kishenganga Arbitration (Final Award) 2013, this article seeks to close some of the gaps pertaining to the rights and obligations of both Parties regarding damming and infrastructural development under the Indus Waters Treaty. The proposed treaty amendments will provide for: (1) Ecological/environmental flows; (2) Environmental impact assessments and audits of all damming and infrastructural development projects prior, during and post implementation; and (3) Quality assurance of hydrological data. It is hoped that strengthening the treaty provisions will not only help reduce the existing list of damming and infrastructural development-related disputes between India and Pakistan but prevent them in the future as well.

### **I. INTRODUCTION**

Given the shortage of electricity in the country, against the drive for economic growth, India has a number of hydroelectric projects on the Western Rivers of the Indus basin, in the pipeline. These rivers have been allocated to Pakistan under the Indus Waters Treaty ('the Treaty'), with certain exceptional uses to India as well. However, India's building of hydro-electric plants has accumulated in an inventory of disputes between her and Pakistan. The recently resolved *Kishenganga Arbitration* is just one of the many. This article looks at damming and infrastructural development in the Indus river basin ('the Basin') and explores the relevant provisions under the Treaty. It then illustrates the extent of damming and infrastructural development-related disputes between India and Pakistan and lists the key points from the *Indus Waters Kishenganga Arbitration (Final Award) 2013* ('the *Final Award*'). This is followed by recommendations for changes to the Treaty in light of the *Final Award* in the hope that this will not only reduce the number of disputes between India and Pakistan, but also reduce future damming and infrastructural development-related disputes.

### **II. DAMMING AND INFRASTRUCTURAL DEVELOPMENT IN THE INDUS RIVER BASIN**

Damming and infrastructural development of river basins is often undertaken for economic gains as well as for protection from extremes in their flow variations, resulting in floods or droughts. The Indus Basin Project, implemented by Pakistan in the Basin in the 1960s, to replace the irrigation supplies from tributaries allocated to India under the Treaty,<sup>1</sup> consisted of the construction of two major dams in Pakistan - the Mangla Dam and the Tarbela Dam (largest on the Basin).<sup>2</sup> It formed part of a larger set of

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<sup>1</sup> SAIYID ALI NAQVI, *INDUS WATERS AND SOCIAL CHANGE: THE EVOLUTION AND TRANSITION OF AGRARIAN SOCIETY IN PAKISTAN* 8 (2013).

<sup>2</sup> SHRIPAD DHARMADHIKARY, *MOUNTAINS OF CONCRETE: DAM BUILDING IN THE HIMALAYAS* 6 (2008) [hereinafter DHARMADHIKARY].

infrastructure projects to further develop the existing Indus Basin Irrigation System (‘the IBIS’).<sup>3</sup> The following table lists the major reservoirs and hydroelectric projects in the Basin constructed post the coming into force of the Treaty, ranked by the amount of reservoir storage.<sup>4</sup>

*Table 1: Major Dams and Developments in the Indus river basin*

<b>Dam</b>	<b>Year</b>	<b>Country</b>	<b>River</b>	<b>Storage (km<sup>3</sup>)</b>	<b>Power (MW)</b>
<b>Tarbela</b>	1977	Pakistan	Indus	14.3 (has shrunk from 11.6 to 8.5 MAF due to sedimentation)	3, 478
<b>Bkakra-Nangal<sup>5</sup></b>	1963	India	Sutlej	9.62	1, 000
<b>Pong</b>	1974	India	Beas	8.57	396
<b>Mangla</b>	1967	Pakistan	Jhelum	5.86 (from 7.25 due to sedimentation)	1, 000
<b>Nathpa-Jhakri</b>	2004	India	Sutlej	run of the river	1, 530
<b>Ghazi Barotha</b>	2004	Pakistan	Indus	run of the river	1, 450
<b>Total</b>					<b>8, 854</b>

The combined effect of the existing storage and diversion projects on the rivers has already seriously impacted the Indus delta in Pakistan.<sup>6</sup> According to a study by the International Union for Conservation of Nature, the flow in the lower Indus river decreased from 105,000 million cubic metres (‘MCM’) in 1932 to 43,000 MCM in 1970 as a result of the number of projects on the Indus and its tributaries.<sup>7</sup> In the 1990s, the flow further reduced to 12,000 MCM.<sup>8</sup> This led to a sharp reduction in the area of mangrove forests, decline in fish production, degradation of water quality and severe encroachment of the sea into the delta area with a resultant loss of 4,856 km<sup>2</sup> of farmland.<sup>9</sup> Due to the 22 dams upstream, the Indus flows today seldom cover 25 percent of its historic floodplain.<sup>10</sup> Thus, the Basin is already physically water scarce.<sup>11</sup> In fact, it is one of the most depleted river basins in the world “with near zero

<sup>3</sup> The IBIS constitutes an extensive system of diversion structures and canals on the Indus River Basin with a total length of 56,000 kilometres. DANIEL HILLEL, *OUT OF THE EARTH* 146 (1991).

<sup>4</sup> DANIEL SELIGMAN, *WORLD’S MAJOR RIVERS: AN INTRODUCTION TO INTERNATIONAL WATER LAW WITH CASE STUDIES* 52 (2008).

<sup>5</sup> DHARMADHIKARY, *supra* note 2.

<sup>6</sup> *Id.*, at 25.

<sup>7</sup> WATER AND NATURE INITIATIVE IUCN (THE WORLD CONSERVATION UNION), *THE LOWER INDUS RIVER: BALANCING DEVELOPMENT AND MAINTENANCE OF WETLAND ECOSYSTEMS AND DEPENDENT LIVELIHOODS* (2003) [hereinafter IUCN (THE WORLD CONSERVATION UNION)].

<sup>8</sup> DHARMADHIKARY, *supra* note 2 at 25.

<sup>9</sup> IUCN (THE WORLD CONSERVATION UNION), *supra* note 7; *see also* THAYER SCUDDER, *GLOBAL THREATS, GLOBAL FUTURES* (2010) [hereinafter SCUDDER]; NOBUO MIMURA, *ASIA-PACIFIC COASTS AND THEIR MANAGEMENT* (2008).

<sup>10</sup> *See* SCUDDER, *supra* note 9, at 84.

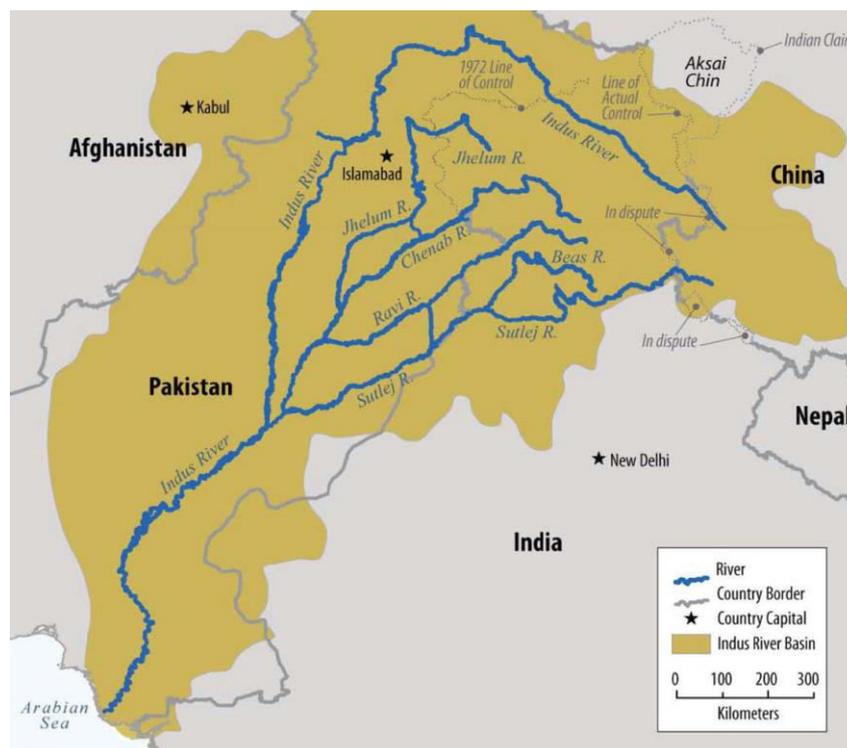
<sup>11</sup> Upali A Amarasinghe, Tushaar Shah & B.K. Anand, *India’s Water Supply and Demand to 2025-2050: Business-As-Usual Scenario and Issues*, in *STRATEGIC ANALYSES OF THE NATIONAL RIVER LINKING PROJECT (NRLP) OF INDIA SERIES 2: PROCEEDINGS OF THE WORKSHOP ON ANALYSES OF HYDROLOGICAL, SOCIAL AND ECOLOGICAL ISSUES OF THE NRLP* 23 (2008).

environmental flows in most years.”<sup>12</sup> This is mainly due to over-extraction for agriculture.<sup>13</sup> As such, the Basin is already experiencing basin closure.<sup>14</sup> Additional dams will only aggravate such problems in the deltaic regions.

### III. THE INDUS WATERS TREATY

The Treaty between India and Pakistan was signed on 19 September 1960.<sup>15</sup> It is, purely, a water sharing agreement which deals with matters only ancillary to it, including provisions for damming and infrastructural development.

In terms of apportionment of the common waters of the Basin between India and Pakistan, the Treaty has allocated the 3 Eastern Rivers of the Indus: the Sutlej, the Beas and the Ravi, to India<sup>16</sup> and the 3 western rivers: the Indus, the Jhelum and the Chenab, to Pakistan.<sup>17</sup> See map below.<sup>18</sup>



The Treaty provides that: “All the waters of the Eastern Rivers shall be available for the unrestricted use of India.”<sup>19</sup> It similarly provides that: “Pakistan shall receive for unrestricted use all those waters of the

<sup>12</sup> Bharat Sharma et al, *The Indus and the Ganges: River Basins under Extreme Pressure* 35 WATER INT’L. 493, 494 (2010). Some definitions of basin closure (see definition in footnote 14) include environmental flow in calculating use. The phrase “with near zero environmental flows” means that human use have cut into what has been calculated as the minimum environmental flows in the particular basin. See SHIMON C. ANISFELD, WATER RESOURCES 84 (2010).

<sup>13</sup> *The Threat of Climate Change to the Indus*, W.W.F. GLOBAL, [http://wwf.panda.org/about\\_our\\_earth/about\\_freshwater/freshwater\\_problems/river\\_decline/10\\_rivers\\_risk/indus/indus\\_threats/](http://wwf.panda.org/about_our_earth/about_freshwater/freshwater_problems/river_decline/10_rivers_risk/indus/indus_threats/).

<sup>14</sup> Basin closure has been defined as “no utilizable outflow of water.” CHENNAT GOPALAKRISHNAN, CECILIA TORTAJADA & ASIT K BISWAS, WATER INSTITUTIONS: POLICIES, PERFORMANCE AND PROSPECTS 156 (2005); See also DAVID WILLIAM SECKLER, THE NEW ERA OF WATER RESOURCES MANAGEMENT: FROM “DRY” TO “WET” WATER SAVINGS 7-8 (1996) for a general discussion of basin closure.

<sup>15</sup> The Indus Waters Treaty, Sept. 19, 1960, 419 U.N.T.S. 126 [hereinafter The Indus Waters Treaty 1960].

<sup>16</sup> *Id.*, arts. I(5) & II(1).

<sup>17</sup> *Id.*, arts. I(6) & III(1).

<sup>18</sup> Reproduced in *Cooperating over Water, for the People of the Indus and Jordan River Basins (Source-U.S. Senate Report)*, ECOPEACE - FRIENDS OF THE EARTH MIDDLE EAST, <http://foeme.wordpress.com/2012/12/30/cooperating-over-water/map-of-the-indus-basin-source-us-senate-report/>.

Western Rivers.”<sup>20</sup> These allocations are however not absolute as both Parties have been allowed some uses in the Rivers allocated to the other, subject to certain qualifications. In juridical terms, it has been stated that it is the nature of the entitlement to the waters of the river system that is significant. In this instance, it is an entitlement to the exclusive use of waters in a specified location.<sup>21</sup> Thus, many commentators are of the opinion that the Treaty has successfully given effect to the “equitable apportionment” of the Indus waters by dividing the six tributaries equally between the two Parties.<sup>22</sup>

The object of the Treaty is that both India and Pakistan “being equally desirous of attaining the most complete and satisfactory utilization” of the Indus waters, recognized the need for “fixing and delimiting, in a spirit of goodwill and friendship, the rights and obligations of each in relation to the other concerning the use of these waters.”<sup>23</sup> These include rights and obligations pertaining to damming and infrastructural development of the Basin.

#### A. RIGHT TO DEVELOPMENT

Under the Treaty, India, being the upper riparian, is under an obligation:

“...to let flow all the waters of the Western Rivers, and shall not permit any interference with these waters, except for the following uses, restricted ... in the case of each of the rivers, The Indus, The Jhelum and The Chenab, to the drainage basin thereof: (a) Domestic Use; (b) Non-Consumptive Use; (c) Agricultural Use, as set out in Annexure C; and (d) Generation of hydro-electric power, as set out in Annexure D.”<sup>24</sup>

As for storage of water, the provision further provides that “Except as provided in Annexures D and E, India shall not store any water of, or construct any storage works on, the Western Rivers.”<sup>25</sup> Only Pakistan, by virtue of being the lower riparian, has conceded by allowing India to generate hydro-electric power and to construct storage works on the Western Rivers. To this end, India has been permitted to construct *Run-of-River Plants*.<sup>26</sup> These are hydro-electric plants that develop power without Live Storage, for the purpose of generation of hydro-electric power. Such constructions have to be in conformity with the specified criteria contained under Annexure D of the Treaty.<sup>27</sup> India has also been permitted to construct storage works<sup>28</sup> with a total maximum storage capacity of 3.6 MAF (0.4 on the Indus, 1.5 on the Jhelum and 1.7 on the Chenab) for general, power and flood storages in accordance with Annexure E.<sup>29</sup> Hence, India’s entitlements of water storages on the Western Rivers are fixed under the Treaty, even when flows are variable.

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<sup>19</sup> The Indus Waters Treaty 1960, *supra* note 15, art. II(1).

<sup>20</sup> The Indus Waters Treaty 1960, *supra* note 15, art. III(1).

<sup>21</sup> D.E. FISHER, *THE LAW AND GOVERNANCE OF WATER RESOURCES: THE CHALLENGE OF SUSTAINABILITY* 217 (2009).

<sup>22</sup> See Stephen C. McCaffrey, *Second Report on the Law of the Non-Navigational Uses of International Watercourses*, 2.2 Y.B. INT’L L. COMMISSION 109 (1986).

<sup>23</sup> The Indus Waters Treaty 1960, *supra* note 15, Preamble.

<sup>24</sup> The Indus Waters Treaty 1960, *supra* note 15, art. III(2). The term “interference with the waters” means any act of withdrawal or any man-made obstruction to the flow which cause a change in the volume of the daily flow of the waters excluding any insignificant and incidental change in the volume of the daily flow; Article 1(15). ‘Domestic use’ has been defined under Article 1(10) and which includes household, municipal and industrial purposes. ‘Non-consumptive use’ has been defined under Article 1(11) and which includes navigation, flood control, fishing and wildlife protection. Agricultural use has been defined under Article 1(9) to mean “the use of water for irrigation, except for irrigation of household gardens and public recreational gardens.”

<sup>25</sup> The Indus Waters Treaty 1960, *supra* note 15, art. III(4).

<sup>26</sup> “Run-of-River Plant” means a hydro-electric plant that develops power without Live Storage as an integral part of the plant, except for Pondage and Surcharge Storage. The Indus Waters Treaty 1960, *supra* note 15, Annex. D, art. (2)(g).

<sup>27</sup> The Indus Waters Treaty 1960, *supra* note 15, Annex. D, art. 8.

<sup>28</sup> “Storage Work” means a work constructed for the purpose of impounding the waters of a stream, with exceptions. See The Indus Waters Treaty 1960, *supra* note 15, Annex. E, art. 2.

<sup>29</sup> The Indus Waters Treaty 1960, *supra* note 15, Annex. E, art. 7.

Apart from these specifications, both Parties are entitled to construct on their allocated Rivers so long as natural channels are maintained to the extent that there is no material damage to the other Party as a result:<sup>30</sup>

“Each Party will use its best endeavours to maintain the natural channels of the Rivers ... in such condition as will to avoid, as far as practicable, any obstruction to the flow in these channels likely to cause material damage to the other Party.”

In order to decipher what this provision means, it has to be interpreted in light of current international standards. ‘Best endeavours’ is not defined, but is obligatory, and according to the Permanent Court of Arbitration (‘PCA’) “expresses a stronger commitment” as opposed to merely being “aspirational in nature.”<sup>31</sup> This can be interpreted to being akin to the requirement that the Parties act with ‘due diligence’ and the duty of vigilance and prevention will apply. As for the obligation “to maintain the natural channels”, the PCA has distinguished the “maintenance of the physical condition of the channels of the rivers [from] maintenance of the volume and timing of the flow of water in these channels” as the term “channel” was taken to “denote the bed of the river, which may or may not be filled with water.”<sup>32</sup> In other words, the above-stated provision mandates preservation of the natural paths of the rivers in an effort to conserve the rivers’ capacity to carry water,<sup>33</sup> but does not extend to minimum environmental flows especially that which India has to maintain upstream of Pakistan.<sup>34</sup>

The PCA further clarifies that Article IV(6) does not require the maintenance of the condition of the channels so as to avoid any type of riverbed degradation, but bears more precisely on the avoidance of any obstruction to the flow in these channels likely to cause material damage to the other Party.<sup>35</sup> While the term ‘material damage’ is not defined, according to Gulhati, “what might be material under one set of circumstances might not be so in a different set of conditions”<sup>36</sup> and is therefore open to interpretation in individual circumstances on a case by case basis.

One principle which has been invoked frequently is that “there should be nothing in the Treaty which would stand in the way of optimum utilisation of the water resources allocated to either party.”<sup>37</sup> Added to this is that “nothing could be included in the Treaty which was against good and sound engineering practice.”<sup>38</sup> This is in line with how the PCA has interpreted the overall provision:<sup>39</sup>

“The general obligation upon both India and Pakistan covering all uses of the Western and the Eastern Rivers under Article IV(6) must yield to the specific Treaty rights of the Parties. The Court cannot accept that Article IV(6) debars the construction and operation of works specifically contemplated by the Treaty.”

In other words, the provision has been interpreted with the right to develop the Indus waters to achieve optimum utilization but the phrase “likely to cause” indicating that the Parties must take a precautionary

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<sup>30</sup> The Indus Waters Treaty 1960, *supra* note 15, art. IV(6).

<sup>31</sup> Indus Waters Kishenganga Arbitration (Pak. v. Ind.), Partial Award of Feb. 18, 2013, at 139, ¶372 (Perm. Ct. Arb.), [http://www.pca-cpa.org/showfile.asp?fil\\_id=2101](http://www.pca-cpa.org/showfile.asp?fil_id=2101) [hereinafter Partial Award].

<sup>32</sup> *Id.* at ¶ 373.

<sup>33</sup> *Id.* at ¶ 373.

<sup>34</sup> This was one of the major considerations in the recent Kishenganga arbitration in which Pakistan requested the PCA to fix a minimum flow which India has to maintain downstream from its Kishenganga Hydroelectric project plant (details in the dispute resolution part of this section). See Indus Waters Kishenganga Arbitration (Pak. v. Ind.), Final Award of Dec. 20, 2013 (Perm. Ct. Arb.), [www.pca-cpa.org/showfile.asp?fil\\_id=2471](http://www.pca-cpa.org/showfile.asp?fil_id=2471) [hereinafter Final Award].

<sup>35</sup> Partial Award, *supra* note 31, at 139, ¶ 374.

<sup>36</sup> NIRANJAN DAS GULHATI, INDUS WATERS TREATY: AN EXERCISE IN INTERNATIONAL MEDIATION 266 (1973).

<sup>37</sup> *See Id.*

<sup>38</sup> *See Id.*

<sup>39</sup> Partial Award, *supra* note 31, at 140, ¶ 375.

approach to such development (as was contended by Pakistan) was ignored in the *Kishenganga Arbitration*.<sup>40</sup> This is despite the ICJ in the *Pulp Mills* case stating that “a precautionary approach may be relevant in the interpretation and application of the provisions of the [1961 Treaty of Montevideo].”<sup>41</sup> Thus, the right to development in the Basin is only constrained to the extent restricted under the Treaty provisions.

#### B. OBLIGATION TO NOTIFY

The Treaty provides that if either Party plans to construct any engineering works which would cause interference with the waters of any of the Rivers and which, in its opinion, would affect the other Party materially, it is under an obligation to notify the other Party of its plans and supply such data relating to the work as may be available and as would enable the other Party to inform itself of: (1) the nature, (2) the magnitude and (3) the effect of the work.<sup>42</sup> Additionally, if an engineering work would cause interference with the waters of any of the Rivers but would not, in the opinion of the Party planning it, affect the other Party materially, then the Treaty provides that the Party planning the work is under an obligation to supply the other Party, *only if requested by it*, such data regarding the nature, magnitude and effect, if any, of the work as may be available.<sup>43</sup> Although notice to the other Party has to provide details about “the nature, magnitude and effect” of any of the planned projects, the Treaty does not expressly require that an environmental impact assessment (EIA) report, even if one is available, be shared with the other Party.<sup>44</sup> Hence, impediments of river flows downstream from planned projects are not considered for any planned measures under the provisions of the Treaty, which is evidenced by the number of unsettled disputes between the Parties. Nevertheless, it has been reported that so far India has maintained a good record in fulfilling the obligation of notification by providing Pakistan with all the details of each of the projects on the Basin, following which Pakistan was able to raise objections.<sup>45</sup> In fact, almost all the water disputes between India and Pakistan are over damming and infrastructural development projects.<sup>46</sup>

#### C. OBLIGATION TO CONSULT, NEGOTIATE AND RESOLVE

The governing body for Basin is the Permanent Indus Commission,<sup>47</sup> the general role of which is to implement the Treaty and to promote cooperation between the Parties in the development of the waters of the Rivers.<sup>48</sup> To this end, they are to serve as a “regular channel of communication” and for this are under an obligation to: (i) furnish or exchange information or data, (ii) give any notice or response to any notice<sup>49</sup> as well as to resolve any “questions” concerning the application or interpretation of the Treaty or the existence of any fact.<sup>50</sup> Hence, all notifications, consultations and negotiations are undertaken through the Commission. Failing resolution of “questions” by the Commission, by agreement between the Parties,<sup>51</sup> the matter is dealt with under the three dispute resolution mechanisms provided for under the Treaty, namely resolution by a Neutral Expert if it amounts to a “difference”<sup>52</sup>, through State level talks<sup>53</sup>

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<sup>40</sup> Though this was raised by Pakistan as a customary principle of International law. Partial Award, *supra* note 31, at 77–78, ¶ 223.

<sup>41</sup> *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, 2010 I.C.J. 14, ¶ 164 (Apr. 20) [hereinafter *Pulp Mills* case].

<sup>42</sup> The Indus Waters Treaty 1960, *supra* note 15, art. VII(2).

<sup>43</sup> *Id.*, art. VII(2).

<sup>44</sup> It follows that the Treaty also does not prescribe the minimum information that an EIA report must contain. As such, the Parties lack of experience and clarity with respect to compiling EIA reports was demonstrated in their submissions to the PCA in the *Final Award*. See discussion under heading 5.2.2(iii) – Downstream Environmental Impacts.

<sup>45</sup> See Zafar Iqbal Choudhary, *In Focus: 50 Years of Indus Water Treaty*, EPILOGUE, Feb. 2010, at 21.

<sup>46</sup> Nausheen Wasi, *Harnessing the Indus Perspectives from Pakistan*, EPILOGUE, Nov. 2009, at 34.

<sup>47</sup> The Indus Waters Treaty 1960, *supra* note 15, art. VIII(3).

<sup>48</sup> *Id.*, art. VIII(4).

<sup>49</sup> As per *Id.*, arts. VIII(1)(a) and (b), respectively.

<sup>50</sup> *Id.*, arts. VIII(4)(a) & IX(1).

<sup>51</sup> *Id.*, art. IX(1).

<sup>52</sup> *Id.*, art. IX(2).

<sup>53</sup> *Id.*, arts. VIII(1) and IX(4).

or Arbitration if it is deemed to be a “dispute”.<sup>54</sup> For 45 years, the Parties had not resorted to dispute resolution by an external Party until 2005, when Pakistan sought from the World Bank an appointment of a Neutral Expert stating that a “difference” had arisen relating to India’s Baglihar project, and the more recent Kishenganga Arbitration settled by the PCA. These are examples of the utility and effectiveness of the divergent avenues provided for under the Treaty.

#### D. MONITORING, ASSESSMENTS AND REPORTING

Apart from pollution control<sup>55</sup> and the maintenance of the natural channels,<sup>56</sup> the Treaty does not have any other provisions on environmental protection, preservation and management.<sup>57</sup> This is not surprising, given that there is no evidence that environmental considerations were taken into account preceding the Treaty. It does, however, provide for the monthly exchange of hydrological data collected daily regarding river flows, extractions for and releases from reservoirs, withdrawals, escapages (water flow from water infrastructures such as headworks, barrages or dams) and deliveries.<sup>58</sup> Furthermore, either Party can request for any additional data including hydrological data for the Rivers.<sup>59</sup> Whilst this does promote exchange and coordination of hydrological data concerning: (1) aspects of the hydrological regime, that is the quantity and dynamics of water flow (though this has limitations in certain areas such as the Line of Control),<sup>60</sup> and (2) river continuity (though this too is limited to Pakistan’s borders), it does not make any connection to groundwater bodies and morphological conditions such as structure and substrate of the river bed and structure of the riparian zone.<sup>61</sup> Thus, whilst the Parties are under an obligation to exchange hydrological data, because there is no obligation on either of the Parties to undertake monitoring, assessment and reporting of the impact of any of the development projects on the Basin, the concept of environmental flows is missing in this governance regime.

Although the Treaty has equitably allocated the 6 tributaries of the Indus Basin between India and Pakistan and has prescribed rights and obligations pertaining to damming and infrastructural development of the Basin, currently there is an inventory of damming and infrastructural development-related disputes between India and Pakistan.<sup>62</sup>

#### IV. DAMMING AND INFRASTRUCTURAL DEVELOPMENT-RELATED DISPUTES

Although water-related disputes between India and Pakistan over the Basin are not new, the recent dispute is especially due to India’s construction of hydro-electric projects on the Western Rivers. Against the potential of 8,800 MW on the Western Rivers, so far India has only installed 1, 425 MW with construction of another 1, 290 MW under progress,<sup>63</sup> leaving a balance of 6,085 MW or 69 percent of the total allowed under the Treaty. The basic driver for hydropower in India is the growing demand for electricity to meet the 9 percent plus annual growth rate of the economy.<sup>64</sup> The overall peak power

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<sup>54</sup> *Id.*, art. IX(5).

<sup>55</sup> *Id.*, art. IV(10).

<sup>56</sup> *Id.*, art. IV(6).

<sup>57</sup> See Convention on the Law of the Non-Navigational Uses of International Watercourses, May 21, 1997, 36 I.L.M. 700 [hereinafter the UN Watercourses Convention].

<sup>58</sup> The Indus Waters Treaty 1960, *supra* note 15, art. VI(1)(a)-(e), respectively.

<sup>59</sup> *Id.*, art. VI(2).

<sup>60</sup> See Final Award, *supra* note 34, at ¶ 90.

<sup>61</sup> See The Indus Waters Treaty 1960, *supra* note 15, art. VI(1)(a)-(e).

<sup>62</sup> See Balraj K. Sidhu, *The Kishenganga Arbitration – Transboundary Water Resources Governance*, 43.3 ENVTL. POL’Y & L. 147 (2013) [hereinafter Sidhu].

<sup>63</sup> Chandrakant D. Tatte, *Indus Waters and the 1960 Treaty between India and Pakistan*, in MANAGEMENT OF TRANSBOUNDARY RIVERS AND LAKES 191 (O Varis, C Tortajada and A K Biswas eds. 2008).

<sup>64</sup> Iram Khalid, *Trans-Boundary Water Sharing Issues: A Case of South Asia*, 1.2 J. POL. STUD. 79, 81 (2010).

demand in the year 2007-08 was 108, 886 MW, which was met with a shortfall of 18,093 MW or 16.6 percent.<sup>65</sup> Hence, there is a strong push for large hydropower projects in India.

However, there have been reports of reduced flows to Pakistan. This is causing particular problems for Pakistan's agricultural sector which is the backbone of its economy.<sup>66</sup> Whilst it has been stated that no single completed or proposed Indian project on the Western Rivers of the Basin alone has the potential to significantly limit flows of water to Pakistan, the long list of proposed Indian projects on those rivers will, in the future give India a cumulative storage capacity to reduce substantively, water flows to Pakistan during the low-flow winter months.<sup>67</sup> Thus, currently the Basin has a long inventory of disputes, especially those pertaining to damming and infrastructural development.<sup>68</sup> These include the recently resolved Baglihar Hydro-Electric Project dispute and the Indus Waters Kishenganga Arbitration, but the still pending controversial projects include Dul Hasti, Uri II, Chutak, Nimoo-Bazgo, Dumkhar, Ratle and Sawlakote Project and the Wullar Barrage/Tulbul Navigation Project.<sup>69</sup> Additional damming and infrastructural development will only add to this list. It is therefore proposed that an analysis of the Kishenganga Arbitration can address some of the inherent shortcomings of the Treaty provisions, which have provided for the right to development but fallen short on environmental considerations.

## V. THE KISHENGANGA ARBITRATION 2010

The Kishenganga dispute is not new in the sense that the basic issue dates back to the late 1980s when Pakistan first raised an objection to the Project.<sup>70</sup> In 2009, India began work on a 35.48-metre high (dropped from 75.48 metres)<sup>71</sup> dam on the Kishenganga River (also known as the Neelum River) in the Basin, from which a tunnel of 24 km was to divert the Kishenganga river into the Jhelum river through electricity-generating turbines.<sup>72</sup> These were to redirect the Kishenganga waters some 100 km to Wullar Lake to support the Tulbul navigation project.<sup>73</sup> On 17 May 2010, Pakistan instituted arbitral proceedings in the PCA against India<sup>74</sup> concerning the Kishenganga Hydro-Electric Project ('KHEP').<sup>75</sup> Pakistan had asked the PCA to determine two issues, one of which was whether India's proposed diversion of the river Kishenganga (Neelum) into another tributary breached Article III(2) (let flow all the waters of the Western Rivers and not permit any interference with those waters) and (2) Article IV(6) (maintenance of natural channels).<sup>76</sup>

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<sup>65</sup> Shaheen Akhtar, *Emerging Challenges to Indus Waters Treaty: Issues of Compliance and Transboundary Impacts of Indian Hydroprojects on the Western Rivers*, INSTITUTE OF REGIONAL STUDIES, at 9, available at <http://www.irs.org.pk/f310.pdf> [hereinafter Shaheen Akhtar].

<sup>66</sup> S. Ahmad, *Water Shortage and Future Agriculture in Pakistan – Challenges and Opportunities*, AGRICULTURE FOUNDATION OF PAKISTAN (Proceedings of the National Conference on 'Water Shortage and Future Agriculture in Pakistan – Challenges and Opportunities'), Aug. 26-27, 2008.

<sup>67</sup> Daanish Mustafa, *Hydropolitics in Pakistan's Indus Basin*, United States Institute of Peace, at 7 (Nov. 2010), available at [http://www.usip.org/sites/default/files/SR261%20-%20Hydropolitics\\_in\\_Pakistan's%20\\_Indus\\_Basin.pdf](http://www.usip.org/sites/default/files/SR261%20-%20Hydropolitics_in_Pakistan's%20_Indus_Basin.pdf) [hereinafter Daanish Mustafa].

<sup>68</sup> See SHAISTA TABASSUM, RIVER WATER SHARING PROBLEM BETWEEN INDIA AND PAKISTAN: CASE STUDY OF THE INDUS WATER TREATY (2004) [hereinafter TABASSUM] and; Shaheen Akhtar, *supra* note 65.

<sup>69</sup> Shaheen Akhtar, *supra* note 65, at 2.

<sup>70</sup> See Sidhu, *supra* note 62.

<sup>71</sup> *Rajya Sabha, Unstarred Question No. 2506, to be Answered on 25.08.2011*, GOVERNMENT OF INDIA: MINISTRY OF EXTERNAL AFFAIRS (Aug. 25, 2011), <http://archive.is/YLCZs>.

<sup>72</sup> See TABASSUM, *supra* note 68, at 42–43.

<sup>73</sup> *Id.*

<sup>74</sup> Pursuant to The Indus Waters Treaty 1960, *supra* note 15, Annex. G, art. 2(b).

<sup>75</sup> *Indus Waters Kishenganga Arbitration (Pakistan v India)*, PERMANENT COURT OF ARBITRATION: COUR PERMANENTE D'ARBITRAGE, [http://www.pca-cpa.org/showpage.asp?pag\\_id=1392](http://www.pca-cpa.org/showpage.asp?pag_id=1392). This was by agreement pursuant to The Indus Waters Treaty 1960, *supra* note 15, art. IX(4).

<sup>76</sup> *Indus Waters Kishenganga Arbitration (Pak. v. Ind.)*, Order on the Interim Measures on Sept. 23, 2011, at 2 (Perm. Ct. Arb.), [www.pca-cpa.org/showfile.asp?fil\\_id=1726](http://www.pca-cpa.org/showfile.asp?fil_id=1726).

## A. THE PARTIAL AWARD

A detailed analysis of the Arbitration's *Partial Award* has been covered in last year's publication of this journal.<sup>77</sup> However, in summary, the full 7-member Court of Arbitration in a decision delivered on 18 February 2012 held that the obligation to maintain the natural channels does not extend to ensuring minimum flows<sup>78</sup> and that India's right to generate hydro-electric power (provided that such generation is conducted in accordance with Annexures D or E) is an express exception to India's obligation to let flow the waters of the Western Rivers.<sup>79</sup> Nevertheless, the right to generate hydro-electric power obliges India to operate those projects in such a way as to avoid adversely affecting Pakistan's not only "then existing" agricultural and hydro-electric uses but anticipated future uses as well.<sup>80</sup> In addition to the duty to avoid transboundary harm, the PCA also took into account contemporary customary international law to take environmental protection into consideration when planning and developing projects that may cause injury to a bordering State.<sup>81</sup> Thus, having regard to the priority accorded to India with regards to the KHEP Plant over that of Pakistan's planned project and principles of international environmental protection law, the PCA concluded that India is under an obligation to construct and operate the Kishenganga Hydro-Electric Plant in such a way as to *maintain a minimum flow of water* in the Kishenganga/ Neelum river at all times,<sup>82</sup> at the rate fixed by the PCA in its *Final Award*.

## B. THE FINAL AWARD

On 20 December 2013, the PCA made a land mark Final Award on the *Kishenganga Arbitration*, the purpose of which was to fix the precise rate of minimum flow to be preserved downstream of the KHEP. In doing so, the PCA filled in an essential gap in the Treaty, which is a minimum flow that India has to maintain for Pakistan from the KHEP. The Court assessed, on the basis of the hydrological data submitted to it, the effects that the KHEP is likely to have on agricultural and hydro-electric uses by Pakistan and on the downstream environment from the KHEP. The Court then determined, taking into account these effects, the minimum flow. Finally, the Court also addressed Pakistan's request that the Court establish a monitoring regime in order to monitor India's compliance of maintenance of the prescribed minimum flow. All of these are addressed in turn.

### Critique of Hydrological Data Collection and Exchange

Before turning to the place of agriculture, hydro-electric power and the environment in determining the minimum flow, the Court recalled the Parties' submissions on the hydrology of the Kishenganga/ Neelum, as these estimates of the river's flow under different conditions underpinned all other calculations. The PCA found that although the Parties submitted extensive evidence highlighting the differences in methodology between them, the Court found that their hydrologic estimates for water flows were actually very similar. The PCA found it important to comment on one aspect of the method of gathering hydrological data. The Parties had disagreed as to the appropriateness of using data exchanged monthly (and not later than within three months of measurement) under Article VI of the Treaty, or data subsequently subjected to statistical analysis and quality control. In the Court's view, there is no requirement that decisions by the Commission, the Neutral Expert, or Courts of Arbitration rendered in relation to the Treaty be based solely on data exchanged pursuant to Article VI(2) of the Treaty. Instead, the Court considered that "quality assurance, if done in a transparent manner, is consonant with best practices in the field of hydrology."<sup>83</sup> Given the lack of sharing of data collected by Pakistan with India, the Court commended to the Parties the practice of undertaking quality assurance on hydrologic data collected on tributaries of the Indus and of sharing such data (together with sufficient

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<sup>77</sup> See Aardraa Upadhyay & Tamojit Chatterjee, *The Kishenganga Hydro-Electric Project Arbitration Dispute - Partial Award (Pakistan v India): An Analysis*, 2.2 INDIAN J. ARB. L. 190.

<sup>78</sup> See discussion under heading 6.1 - Incorporating Ecological Flows.

<sup>79</sup> Partial Award, *supra* note 31, at 140, ¶ 376.

<sup>80</sup> Final Award, *supra* note 34, ¶ 94.

<sup>81</sup> Partial Award, *supra* note 31, at 169, ¶ 449.

<sup>82</sup> *Id.* at 171, ¶ 453.

<sup>83</sup> Final Award, *supra* note 34, ¶ 91.

elaboration to explain variations from data exchanged under Article VI of the Treaty) through the mechanisms of the Permanent Indus Commission. Thus, while data exchange has been provided for under the Treaty through the Permanent Indus Commission, lack of transparency has been urged as a matter of quality assurance, not forgetting the principle of good faith present not only in the Treaty but also in international environmental law.<sup>84</sup>

### **The Downstream Effects of the KHEP**

In order to fix a minimum flow, the PCA analysed Pakistan's agricultural, hydro-electric and environmental uses downstream from the KHEP. The Court adopted a two-step approach: first it considered the downstream effects of the KHEP and second, it decided how the Treaty, as interpreted in its *Partial Award*, was to be applied to these facts

#### **(i) Pakistan's Agricultural Uses**

The PCA had already decided in its *Partial Award* that no Pakistani agricultural use had been established at the time the KHEP crystallized and acquired priority over Pakistan's Neelum-Jhelum Hydro-Electric Project ('JHEP'). Nevertheless, Pakistan's treaty rights in this regard remained relevant to the continuing operation of the KHEP in conformity with treaty requirements,<sup>85</sup> which is, that any existing agricultural use by Pakistan would not be adversely affected. Though the provision only talks about existing agricultural use by Pakistan, in setting a fixed minimum flow, the Court clarified that any anticipated future agricultural use would also have ordinarily featured in the Court's determination. However, as Pakistan had not submitted any estimate of the likely scope of such development, the Court was unable to take account of such potential uses and had reached its determination of the minimum flow on the basis of hydro-electric and environmental factors alone. Having done so, the Court was nevertheless confident that the minimum flow it has prescribed on the basis of other factors will ensure sufficient water in the river so as to not curtail agricultural development in the Neelum valley and achieve the "equipoise" between Pakistan's right to the use of the waters of the Western Rivers and India's right to use the waters of those Rivers for hydroelectric generation once a plant complies with the provisions of Annexure D.<sup>86</sup>

#### **(ii) Pakistan's Hydro-Electric Uses**

On the basis of the data submitted by Pakistan, it was apparent to the PCA that the operation of the KHEP would reduce the potential energy generated by the NJHEP under nearly any minimum flow scenario. India objected to Pakistan's flow scenarios, arguing that each would substantially reduce power generation at the KHEP and undermine the priority accorded to the KHEP in the Court's *Partial Award*. With respect to the effects of the KHEP, the Court noted only that the NJHEP would be affected by any prescribed minimum flow given that the "relationship between flow and energy generation is direct and approximately linear."<sup>87</sup>

#### **(iii) Downstream Environmental Impacts**

In order to set a minimum flow downstream from the KHEP, the PCA requested both India and Pakistan, not just India, to provide an environmental impact assessment report of the project on the environment. The Parties submitted markedly different assessments of the environmental changes that

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<sup>84</sup> See UN Watercourses Convention, *supra* note 57, art. 8(1); Sources of the International Law Association Rules on Water Resources, art. 11, available at [http://internationalwaterlaw.org/documents/intldocs/ILA\\_Berlin\\_Rules-2004.pdf](http://internationalwaterlaw.org/documents/intldocs/ILA_Berlin_Rules-2004.pdf) [hereinafter Berlin Rules on Water Resources]; Pulp Mills case, *supra* note 41, ¶¶ 144-145; Case concerning the Gabčíkovo-Nagymaros Project (Hung. v. Slov.), 1997 I.C.J. Rep. 7, ¶ 112 (Sept. 5) [hereinafter Gabčíkovo-Nagymaros Project].

<sup>85</sup> The Indus Waters Treaty 1960, *supra* note 15, Annex. D, art. 15(iii) provides that: "where a Plant is located on a Tributary of The Jhelum on which Pakistan has any Agricultural use or hydro-electric use, the water released below the Plant may be delivered, if necessary, into another Tributary but only to the extent that the then existing Agricultural Use or hydro-electric use by Pakistan on the former Tributary would not be adversely affected."

<sup>86</sup> *Partial Award*, *supra* note 31, at 161, ¶ 433.

<sup>87</sup> *Final Award*, *supra* note 34, ¶ 96.

would occur downstream of the KHEP. On the one hand, Pakistan had undertaken a holistic assessment of the interaction of a range of environmental indicators and predicted moderate to serious changes in the ecosystem. Each differed with the degree of change dependent on the rate of flow in the river. Thus, Pakistan has undertaken a far more extensive environmental impact analysis, attempting to capture complex interactions within the river ecosystem. On the other hand, India had based its assessment on the anticipated water depth and its effect on three umbrella species of fish and concluded that there would be no effect on the aquatic environment with a flow of as low as 2 cumecs. Thus, in contrast, India had carried out a simpler assessment, drawing its conclusions essentially from a single indicator - the habitat available for selected fish species. Given the lack of environmental impact assessment requirements under the Treaty for activities such as those related to damming and infrastructural development, it is not surprising that both India and Pakistan submitted such divergent environmental impacts assessments of the KHEP.

However, the PCA viewed the differences between the Parties' assessments in light of the evolving science of predicting the environmental changes that would result from altered flow conditions. While the Court did not comment on the lack of environmental impact assessment requirements under the Treaty, the Court noted that "assessments [containing extensive analysis, attempting to capture complex interactions within the river ecosystem] are increasingly used by scientists and policymakers to bring a deeper understanding of ecology to bear on the management and development of river systems."<sup>88</sup> Furthermore, while there is no single "correct" approach to environmental assessments, the Court did indicate that for any given river or project, the correct approach will depend upon the following factors: (1) the existing state of the river, (2) the magnitude of anticipated changes, (3) the importance of the proposed project, (4) the availability of time, (5) the level of funding available and (6) the degree of local expertise.<sup>89</sup> Thus, for a project of the magnitude of the KHEP, the Court was of the view that an in-depth environmental impact assessment, which adequately highlights the complexity of the ecosystem in the Kishenganga/Neelum, is appropriate for estimating potential changes in the downstream environment.

The PCA clarified that what it was looking for was a "degree of certainty" as to the "results" and not any "attempt to apply contemporary international practices in a challenging setting."<sup>90</sup> Although the PCA worked with the impact assessment reports that had been submitted by both Parties, appreciating that more comprehensive and accurate information on the likely impacts of infrastructure projects can only benefit decision-making under the Treaty, the Court urged both Parties to take environmental considerations in other projects. In the PCA's view, such an approach was seen as "consistent with the acute need of both Parties for increased production of hydro-power."<sup>91</sup> The Court did express that its decision on the minimum flow was informed by a deep awareness of the critical importance (and shortage) of electricity in both India and Pakistan. However, the PCA stated that development of hydro-electricity need not be at odds with careful consideration of environmental effects based on an ecosystem approach, thereby balancing economic needs with that of the environment.

(iv) **Additional Factors for the Determination of Minimum Flow**

Assessing the effects of the KHEP downstream was the first step of the task facing the Court. Two additional factors had to be given effect in its determination of the minimum flow: (1) the *Partial Award* accorded priority to the KHEP over Pakistan's NJHEP, resulting in the former's priority in right over the latter with respect to the use of the waters of the Kishenganga/ Neelum for hydro-electric power

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<sup>88</sup> *Id.* ¶ 98.

<sup>89</sup> *Id.* At 36, ¶ 99.

<sup>90</sup> *Id.* At 36, ¶ 100.

<sup>91</sup> *Id.* At 36, ¶ 101.

generation; and (2) the Treaty provides for consideration of international conventions and customary international law.<sup>92</sup>

While the Court held that the KHEP must be operated in such a manner that “[b]oth Parties’ entitlements under the Treaty must be made effective so far as possible,” it stated clearly that “[t]he requirement to avoid adverse effects on Pakistan’s agricultural and hydroelectric uses of the waters of the Kishenganga/Neelum cannot, however, deprive India of its right to operate the KHEP ... effectively.” Hence, in balancing India’s right with the needs of the downstream environment, the Court also took account of environmental considerations.

The PCA recalled its *Partial Award* in which it noted with approval, the *Iron Rhine Arbitration*, which built on the judgment of the International Court of Justice in the *Case Concerning the Gabčíkovo-Nagymaros Project* that:<sup>93</sup>

“It is established that principles of international environmental law must be taken into account even when (unlike the present case) interpreting treaties concluded before the development of that body of law. ... Similarly, the International Court of Justice in *Gabčíkovo-Nagymaros* ruled that, whenever necessary for the application of a treaty, “new norms have to be taken into consideration, and . . . new standards given proper weight.”<sup>[94]</sup> It is therefore incumbent upon this Court to interpret and apply this 1960 Treaty in light of the customary international principles for the protection of the environment in force today.”

In implementing this holding, the Court noted that the place of customary international law in the interpretation or application of the Treaty remained subject to Paragraph 29 of Annexure G. Unlike the treaty in *Iron Rhine*, the Treaty expressly limits the extent to which the Court may have recourse to and apply sources of law beyond the Treaty itself. The Court reiterated that: “States have ‘a duty to prevent, or at least mitigate’ significant harm to the environment”<sup>95</sup> and not just to the other Party when pursuing large-scale construction activities.

Unlike its adoption by international law and policy instruments,<sup>96</sup> the Treaty does not impose the obligation not to cause significant harm or to prevent or minimize harm, either generally, or when Parties are pursuing damming and infrastructural-related development of the Indus waters. Given its presence under customary international environmental law, this Court in the *Partial Award* had no difficulty concluding that environmental flow is necessary in the application of the Treaty. However, the Court was not prepared to adopt a precautionary approach in determining the balance between acceptable environmental changes or to permit environmental considerations to override the rights and obligations of Parties under the Treaty, especially the right of India to divert the waters of a tributary of the Jhelum.<sup>97</sup>

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<sup>92</sup> The Indus Waters Treaty 1960, *supra* note 15, Annex. G, art. 29 provides: “Except as the Parties may otherwise agree, the law to be applied by the Court shall be this Treaty and, whenever necessary for its interpretation or application, but only to the extent necessary for that purpose, the following in the order in which they are listed: (a) International conventions establishing rules which are expressly recognized by the Parties; and (b) Customary international law.”

<sup>93</sup> *Partial Award*, *supra* note 31, at 171, ¶ 452.

<sup>94</sup> *Gabčíkovo-Nagymaros Project*, *supra* note 84, at 7, 78.

<sup>95</sup> *Partial Award*, *supra* note 31, at 170; ¶ 451.

<sup>96</sup> UN Watercourses Convention, *supra* note 57, art. 7; and Berlin Rules on Water Resources, *supra* note 84, art. 8.

<sup>97</sup> While the PCA in the *Partial Award* had no difficulty concluding that the requirement of an environmental flow is necessary in the application of the Indus Waters Treaty, at the same time, it did not consider it appropriate, and certainly not “necessary,” for it to adopt a precautionary approach and assume the role of policymaker in determining the balance between acceptable environmental change and other priorities, or to permit environmental considerations to override the balance of other rights and obligations expressly identified in the Treaty—in particular the entitlement of India to divert the waters of a tributary of the Jhelum. The Court’s authority, it considered, was more limited and extended only to mitigating significant harm. Beyond that point, prescription by the Court was prohibited by the Treaty. Echoing the Court’s caution in the *Partial Award*, the prioritization of the environment above all other considerations would effectively “read the principles of Paragraph 15(iii) [of Annexure D] out of the Treaty.” Which was not submitted under para 29 of Annexure G.

Thus, the Court in its *Final Award* restricted its authority only to mitigating significant harm as per Treaty interpretation, thereby fixing a minimum flow.<sup>98</sup>

### **Determination of the Minimum Flow**

India and Pakistan did not disagree that the maintenance of a minimum flow downstream of the KHEP was required in response to considerations of environmental protection. The Parties differed, however, as to the quantity of water that would constitute an appropriate minimum. Thus, the PCA's task was to determine the precise amount of flow to be preserved that would mitigate adverse effects to Pakistan's agricultural and hydro-electric uses throughout the operation of the KHEP as well as the downstream environmental impact of KHEP, while preserving India's right to operate the KHEP and having due regard of customary international law requirements of avoiding or mitigating significant transboundary harm and of reconciling economic development with that of environmental protection. Thus, in balancing all of these matters and having analysed the data submissions made by both India and Pakistan, the Court fixed the minimum flow to be released downstream from the KHEP dam at 9 cumecs.

For avoidance of any doubt, if at any time, however, the flow in the Kishenganga/ Neelum immediately upstream of the KHEP dam falls below 9 cumecs, the PCA placed India under an obligation to release all of the inflow, until the flow upstream of the KHEP dam exceeds 9 cumecs again.<sup>99</sup>

### **Review of the Environmental Flow Regime**

The PCA noted that a degree of uncertainty was inherent in any attempt to predict environmental responses to changing conditions in the Indus Basin. In addition, flows at the Line of Control are ungauged and therefore estimated data by India and Pakistan differ. Uncertainty is also present in attempts to predict future flow conditions and the Court was cognizant that flows in the Kishenganga/ Neelum may come to differ, perhaps significantly, from the historical record as a result of factors beyond the control of either Parties, including climate change and its impact on the Indus Basin.<sup>100</sup>

The Court recalled its statement in the *Partial Award* whereby it stated that "stability and predictability in the availability of the waters of the Kishenganga/ Neelum for each Party's use are vitally important for the effective utilization of rights accorded to each Party by the Treaty (including its incorporation of customary international environmental law)."<sup>101</sup> While the Court upheld this, it also considered it important not to permit the doctrine of *res judicata* to extend the life of the *Final Award* into circumstances in which its reasoning would no longer accord with reality along the Kishenganga/ Neelum.<sup>102</sup> Thus, given the future uncertainties associated with the flows, the fixed minimum is open to reconsideration.

In this regard, the Court urged that the KHEP should be completed in such a fashion as to accommodate possible future variations in the minimum flow requirements. For this reason, if within 7 years after the diversion of the Kishenganga/Neelum through the KHEP, either Party considers that reconsideration of the Court's determination of the minimum flow is necessary it will be entitled to seek such reconsideration through the Permanent Indus Commission and the mechanisms of the Treaty.

### **Monitoring of the Prescribed Minimum Flow**

In addition to fixing an environmental flow, Pakistan had also requested the PCA to establish a monitoring regime to allow it to evaluate India's compliance with the fixed flow. According to India, the Permanent Indus Commission already serves the monitoring role that Pakistan sought. India noted that "[t]here is no reason to believe on the basis of the historical record that this 'communication within the Commission cannot be relied upon as a means for transmitting accurate data in a timely manner.'"<sup>103</sup> India

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<sup>98</sup> As per The Indus Waters Treaty 1960, *supra* note 15, Annex. G, art. 29.

<sup>99</sup> Final Award, *supra* note 34, at 41, ¶ 116.

<sup>100</sup> *Id.* ¶ 117.

<sup>101</sup> *Id.* ¶ 118.

<sup>102</sup> *Id.*

<sup>103</sup> *Id.*, at 28, ¶ 73.

maintained that the Parties' exchange of data on flows and water utilization through the Commission under Articles VI and VIII of the Treaty has proceeded regularly and smoothly since its inception. Thus, in India's view, an additional inspection regime was unwarranted and unnecessary.

The PCA agreed that the appropriate mechanism for the exchange of data and for the monitoring of the Parties' uses on tributaries of the Indus River was the Permanent Indus Commission. The Court recalled, in particular, that Article VI(1) of the Treaty already requires the Parties to exchange "(a) Daily (or as observed or estimated less frequently) gauge and discharge data relating to flow of the Rivers at all observation sites" and "(b) Daily extractions for or releases from reservoirs."<sup>104</sup> The Court was confident that the Parties would continue to exchange data and that India will include the necessary data relating to the KHEP. The Court further recalled that Article VIII(4) calls for the Commission to "undertake promptly, at the request of either Commissioner, a tour of inspection of such works or sites on the Rivers as may be considered necessary ... for ascertaining the facts connected with those works or sites."<sup>105</sup> Thus, in light of these provisions, the Court concluded that it was neither necessary nor within the Court's purview to instruct the Commission or to mandate a special monitoring regime in the implementation of the *Final Award*.

This case highlights that whilst the Treaty, negotiated in 1960, may not be provisionally adequate to address current issues between India and Pakistan, it has the capacity to continue to provide the working relationship between India and Pakistan to allow them to continue to utilize the Indus waters in order to meet their economic needs while at the same time leave enough for the basin's ecological sustainability. However, while the PCA has fixed a minimum flow downstream from the KHEP, this would not solve the overall damming and infrastructural development-related problems in the Basin unless the following recommended modifications to the Treaty are implemented.

## VI. TIME TO REVIEW THE TREATY

Judge Stephen M. Schwebel, Chairman of the PCA in the *Kishenganga Arbitration* observed that: "The Indus Waters Treaty was a great achievement of Pakistan and India and of the World Bank, and it remains so; ... and these proceedings are an illustration of its continuing vitality."<sup>106</sup> However, the stacking up of the number of damming and infrastructural development-related disputes also indicates that the Treaty provisions are not apt to deal with environmental consideration assessments which are required before, during and after project planning and implementation. The Treaty already provides for modification of Treaty provisions: "The provisions of this Treaty may from time to time be modified by a duly ratified treaty concluded for that purpose between the two Governments"<sup>107</sup> but has not been modified since its inception in 1960.

### A. INCORPORATING ECOLOGICAL FLOWS

The PCA has insisted in its *Final Award* that its fixing of a minimum flow should not be equated to an environmental flow. However, in fixing a minimum flow, the Court clarified the difference between 'minimum flow' and 'environmental flow' as follows:<sup>108</sup>

"an environmental flow is not necessarily a fixed minimum, affecting only the dry season, but is rather the flow regime anticipated to maintain environmental change resulting from infrastructure and development within the range considered acceptable under the circumstances of the river in question. Environmental flows may therefore be higher or lower, depending on those circumstances, and may include requirements affecting the high flow seasons of a river that cannot reasonably be described as a 'minimum.'"

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<sup>104</sup> *Id.*, at 42, ¶ 121.

<sup>105</sup> *Id.*

<sup>106</sup> PCA Press Release, *Indus Waters Kishenganga Arbitration: Court of Arbitration Concludes Hearing on the Merits*, PERMANENT COURT OF ARBITRATION: COUR PERMANENTE D'ARBITRAGE, [www.pca-cca.org/showfile.asp?fil\\_id=1970](http://www.pca-cca.org/showfile.asp?fil_id=1970).

<sup>107</sup> The Indus Waters Treaty 1960, *supra* note 15, art. XII(3).

<sup>108</sup> *Final Award*, *supra* note 34, at 35, fn. 151.

Thus, an environmental flow regime is a variable flow regime with a fixed minimum flow, which taking into account all phases of the discharge regime, allows the river basin's ecosystem to develop resilience to changing circumstances, be it due to climate change or such other factors, as well as to ensure that river basin development is environmentally sound.

In this instance, the PCA opined that “[U]nder other circumstances, in particular where the difficulties of cooperation between the multiple State bureaucracies are not present, the appropriate environmental flow could well involve a regime of variable releases.”<sup>109</sup> Although Pakistan had proposed a percentage or variable release flow regime, which are examples of such environmental flows, the Court fixed a minimum flow. This is because the Court's ultimate flow determination is based not solely on the environment but balanced against India's right to hydro-electric power generation as provided for under the Treaty. Moreover, since the Parties' data indicated that the effect of the KHEP on dry-season flows was the principal determinant of ecological change, the Court saw no reason to consider a percentage or variable release regime. As such, the fixed minimum flow also serves as an environmental flow but without being synonymous with that term. However, environmental/ ecological flows are an ideal situation when taking an ecosystem approach to adaptive management of river basins. While undertaking an environmental impact assessment is useful using the initial stages of a planned project for its potential impact on the environment including minimum flows downstream from the planned project, an ecological flow will serve as a guideline to assess not only the post-implementation of planned projects but also enable other factors, such as climate change, impacting the flow regime to be accounted for. Thus, it is quite important to take a holistic view of river basin development rather than in isolation of certain environmental factors to the artificial exclusion of the others. It is thus proposed that the Treaty be amended to allow for ecological flows. While the 1991 Water Apportionment Accord of the Indus River System between the provinces in Pakistan recognised the need for a quantity of water to maintain the Indus delta's functioning, and the *Final Award* addresses flow concerns from the KHEP Plant, it does not fully address the issue of environmental flows in the entire river basin. India has already mandated its National Ganga River Basin Authority to “maintain minimum ecological flows” in the river Ganga with the aim of ensuring water quality and environmentally sustainable development. A rudimentary recognition of environmental needs is included in its hydropower development policy as well.<sup>110</sup> Whilst guidelines are scattered, the European Union is currently drafting a Guidelines on Ecological Flows for its water bodies due in October 2014, which may serve as a framework model for international river basins in other regions as well.<sup>111</sup>

As already iterated, Article IV of the Treaty provides that:<sup>112</sup>

“Each Party will use its best endeavours to maintain the natural channels of the Rivers ... in such condition as will to avoid, as far as practicable, any obstruction to the flow in these channels likely to cause material damage to the other Party.”

As interpreted by the PCA, maintenance of natural channels does not extend to maintenance of environmental flows. Moreover, the expression “material damage” under Article IV only extends to the other Party and not harm to the environment of the river basin itself, which is consistent with the Treaty's lack of environmental considerations of the water sharing regime. Thus, it is recommended that this Article be revised to incorporate maintenance of the natural channels including environmental flows to the extent that it avoids any likelihood of material damage to the other Party or to the environment of any of the Eastern and Western Rivers.

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<sup>109</sup> *Id.* At 37, fn. 154.

<sup>110</sup> Tom Le Quesne, Eloise Kendy & Derek Weston, *The Implementation Challenge: Taking Stock of Government Policies to Protect and Restore Environmental Flows*, at 14, available at [http://www.hydrology.nl/images/docs/alg/2010\\_The\\_Implementation\\_Challenge.pdf](http://www.hydrology.nl/images/docs/alg/2010_The_Implementation_Challenge.pdf).

<sup>111</sup> See European Commission, *Working Group Ecological Flows*, [https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp?FormPrincipal:\\_idcl=navigationLibrary&FormPrincipal\\_SUBMIT=1&org.apache.myfaces.trinidad.faces.STATE=DUMMY&id=764dcfed-6e09-4683-be61-951647df760a](https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp?FormPrincipal:_idcl=navigationLibrary&FormPrincipal_SUBMIT=1&org.apache.myfaces.trinidad.faces.STATE=DUMMY&id=764dcfed-6e09-4683-be61-951647df760a) (Last visited Sept. 9, 2014).

<sup>112</sup> The Indus Waters Treaty 1960, *supra* note 15, art. IV(6).

## B. ENVIRONMENTAL IMPACT ASSESSMENTS AND AUDITS

The PCA noted in its *Final Award* that EIAs comprising of extensive analysis, attempting to capture complex interactions within the river ecosystem in order to predict the environmental changes that would result from altered flow conditions are increasingly used by scientists and policymakers to bring a deeper understanding of ecology to bear on the management and development of river systems.<sup>113</sup> While the Court has said that there is no single “correct approach”, listing instead, factors that determine whether or not an assessment would be required and if so, the appropriate level of assessment, the United Nations Economic Commission for Europe’s Convention on Environmental Impact Assessment in a Transboundary Context (‘Espoo (EIA) Convention’)<sup>114</sup> has a list of content that an EIA document has to contain.<sup>115</sup>

Currently, the Permanent Indus Commission is under an obligation to: (i) furnish or exchange information or data.<sup>116</sup> However, this does not include any obligation to undertake and furnish any EIAs for the construction of any engineering works as envisaged under Article VII of the Treaty. Under the Espoo (EIA) Convention, while notification contains “Information on the proposed activity, including any available information on its possible transboundary impact”, consultations pertaining to any proposed activity are only undertaken on the basis of the EIA documentation.<sup>117</sup> Whilst the obligation to notify under the Treaty talks about supplying such data relating to the work as may be available and as would enable the other Party to inform itself of: (1) the nature, (2) the magnitude and (3) the effect of the work,<sup>118</sup> it lacks the next stage which is consultations based on an EIA report. Given the number of development-related disputes between the Parties, and recent international cases and arbitrations, it is now “a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource.”<sup>119</sup> Thus, not undertaking an environmental impact assessment should no longer be considered to be an option and a report must accompany notification. It is thus recommended that a separate article be included that not only mandates the undertaking of an EIA for any engineering works but also for any activity that may “cause any interference with the waters of any of the Rivers, and which, in the origin Party’s opinion, would affect the other Party materially”<sup>120</sup> or affect the environment of any of the Rivers.

In terms of audits of damming and infrastructural development-related projects, the PCA in this instance held that Pakistan’s agricultural and hydro-electric uses are relevant at two distinct times: first, at the time the KHEP crystallized; and, second, on an ongoing basis throughout the operation of India’s Plant. This requirement is derived from the applicability of the principle of sustainable development which is also absent under the Treaty. The PCA in its *Partial Award* had referred to the principle of sustainable development and translated its applicability to large-scale planned projects in the following terms:

“Applied to large-scale construction projects, the principle of sustainable development translates, as the International Court of Justice recently put it in *Pulp Mills*, into “a

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<sup>113</sup> Final Award, *supra* note 34, ¶¶ 97-98.

<sup>114</sup> Convention on Environmental Impact Assessment in a Transboundary Context, Sept. 10, 1991, 30 I.L.M. 802 [hereinafter Espoo Convention].

<sup>115</sup> As a minimum, the list includes but is not limited to:<sup>115</sup> (a) A description of the proposed activity and its purpose; (b) A description of the environment likely to be significantly affected by the proposed activity; (c) A description of the potential environmental impact of the proposed activity and an estimation of its significance; (d) A description of mitigation measures to keep adverse environmental impact to a minimum; (e) An explicit indication of predictive methods and underlying assumptions as well as the relevant environmental data used; (f) An identification of gaps in knowledge and uncertainties encountered in compiling the required information; and (g) Where appropriate, an outline for monitoring and management programmes and any plans for post-project analysis. Espoo Convention, *supra* note 114, art. 4(1), Append. II.

<sup>116</sup> The Indus Waters Treaty 1960, *supra* note 15, art. VIII(1)(a).

<sup>117</sup> Espoo Convention, *supra* note 114, art. 5.

<sup>118</sup> The Indus Waters Treaty 1960, *supra* note 15, art. VII(2).

<sup>119</sup> Partial Award, *supra* note 31, at 170, ¶ 450.

<sup>120</sup> Taken from the Indus Waters Treaty, *supra* note 15, art. VII(2).

requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource.” The International Court of Justice affirmed that “due diligence, and the duty of vigilance and prevention which it implies, would not be considered to have been exercised, if a party planning works liable to affect the regime of the river or the quality of its waters did not undertake an environmental impact assessment on the potential effects of such works.”<sup>[121]</sup> Finally, the International Court of Justice emphasized that such duties of due diligence, vigilance and prevention continue “once operations have started and, where necessary, throughout the life of the project.”<sup>122</sup>

The PCA thereby linked the principle of sustainable development, which seeks to strike a balance between economic development and environmental protection, with the *ongoing* duty to undertake an environmental impact assessment where there is a potential for risk to the quantity or quality of the international river waters from large-scale planned projects. Thus, the Court in this instance concluded that “hydro-electric projects (including Pakistan’s projects) must be planned, built and operated with environmental sustainability in mind.”<sup>123</sup> This gives rise to the Party’s obligation to ensure that the other Party’s rights to use of the waters allocated to them are not breached. This requires regular audits post implementation of any projects that have been executed. This idea of post-implementation audits has been present in the context of the Espoo (EIA) Convention as well as the recently formulated Nile River Basin Cooperative Framework Agreement 2010.<sup>124</sup> Thus, the EIA provision must provide for EIA’s not only prior to and during formulation of a planned project but audits for post-implementation environmental impacts as well.

### C. QUALITY ASSURANCE OF DATA EXCHANGED

The PCA, in terms of data sharing, has stated that “quality assurance, if done in a transparent manner, is consonant with best practices in the field of hydrology.”<sup>125</sup> Whilst the PCA pointed out the lack of data sharing by Pakistan with India, a US study has criticized India in not being so forthcoming on flow data.<sup>126</sup> Currently, Article VI of the Treaty on Exchange of Data does provide for data exchange but as it is apparent, this is not being done effectively and transparently. Thus, Article VI ought to be revised so that data related to environmental flows at various points can also be disseminated between the Parties. To this end, the Parties may even consider establishing a Technical Advisory Committee (akin to the one envisaged under the Nile River Basin Cooperative Framework Agreement), as an organ of the Permanent Indus Commission, to oversee not only data collection and verification but also entrusted with the task of dealing with the technical matters in an EIA report. However, the onus of data collection and verification does not need to stop at India but should extend to Pakistan as well, to deal with the ecology of the entire part of the Basin governed by the Treaty. Environmental flows (or water requirements) is a compromise or balance between water resources development and maintenance of a river in an ecologically acceptable or agreed condition.<sup>127</sup> For this purpose, it is important to work out the ecological status first, which focuses on the main aquatic features and problems within the river basin.<sup>128</sup> Once this is worked out, the Parties can then work towards maintaining a target of environmental flows, in a variable regime depending on its needs as circumstances change over time.

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<sup>121</sup> Pulp Mills case, *supra* note 41, at 14, 83.

<sup>122</sup> Partial Award, *supra* note 31, at 170, ¶ 450.

<sup>123</sup> *Id.* at 171–172, ¶ 454.

<sup>124</sup> Available from *African River Basins: Nile River Basins*, INTERNATIONAL WATER LAW PROJECT, available at <http://www.internationalwaterlaw.org/documents/africa.html#Nile River Basin>.

<sup>125</sup> Final Award, *supra* note 34, at 33, ¶ 91.

<sup>126</sup> Daanish Mustafa, *supra* note 67, at 7.

<sup>127</sup> VLADIMIR SMAKHTIN ET AL., DEVELOPING PROCEDURES FOR ASSESSMENT OF ECOLOGICAL STATUS OF INDIAN RIVER BASINS IN THE CONTEXT OF ENVIRONMENTAL WATER REQUIREMENTS 1 (2007).

<sup>128</sup> *Id.* at 2.

## VII. CONCLUSION

While the PCA Awards are something that India and Pakistan can resort to, albeit to a limited extent, resolution of existing disputes as well as future disputes and amending the relevant Treaty provisions will help strengthen the Treaty provisions. This will not only address but prevent further disputes. As already stated, the Treaty does provide for India's construction of the hydel projects but on the proviso that it does not disrupt or reduce water flows to Pakistan. Its duty to ensure that a minimum flow reaches Pakistan also stems from the Treaty's interpretation in light of customary international environmental law. However, the Treaty neither provides for ecological flows nor does it oblige the Parties to furnish an environmental impact assessment report for planned projects to evaluate transboundary impacts. Further, it does not allow for ongoing audits of projects already in place and does not provide for quality assurance of data exchanged. It does, however, allow for modifications to be duly made to its texts and India and Pakistan should take advantage of that to provide for: environmental flows, environmental impact assessments and audits and quality assurance of data exchanged. Until then, while increased damming and infrastructural development may serve the economic interests of both Parties, lack of environmental considerations will simply fail to achieve the very balance that the principle of sustainable development seeks.