

# **APPENDIX A**

## **THE *TRAVAUX PRÉPARATOIRES* AND CIRCUMSTANCES OF CONCLUSION OF THE INDUS WATERS TREATY RELEVANT TO THE QUESTIONS OF SYSTEMIC INTERPRETATION BEFORE THE COURT**

## Appendix A

### THE *TRAVAUX PRÉPARATOIRES* AND CIRCUMSTANCES OF CONCLUSION OF THE INDUS WATERS TREATY RELEVANT TO THE QUESTIONS OF SYSTEMIC INTERPRETATION BEFORE THE COURT

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## 1. INTRODUCTION

1. This **Appendix A** provides an overview of the negotiating history and *travaux préparatoires* (“*travaux*”) of the Indus Waters Treaty insofar as is relevant to the questions of systemic interpretation before the Court of Arbitration.<sup>1</sup> Those questions centre on the interpretation and application of Article III and Part 3 of Annexure D of the Treaty.

2. The materials considered for the purposes of this **Appendix A** comprise: (a) documents forming part of the World Bank archive of records relating to the negotiation of the Treaty (“**World Bank archives**”);<sup>2</sup> (b) other documents relating to the preparatory work of the Treaty submitted by the Parties in the *Kishenganga* arbitration; and two further categories of documents located by Pakistan’s counsel while preparing Pakistan’s Memorial, namely (c) documents held in the files of the Government of Pakistan relating to the preparatory work of the Treaty; and (d) materials from the “Raymond Albert Wheeler papers” – a collection of papers held by the Hoover Institution Library and Archives<sup>3</sup> (“**Wheeler archives**”).<sup>4</sup>

3. As regards category (d), Pakistan located and reviewed the Wheeler archives as part of its research into the negotiating history of the Treaty. General Raymond Wheeler joined the World Bank as an engineering consultant in 1949,<sup>5</sup> and led the World Bank’s group of technical experts in the negotiations between India, Pakistan and the Bank over the use of waters of the Indus River between 1952 and 1960. Prior to his work with the World Bank, General Wheeler served as Chief of the US Army Corps of Engineers between 1946 and 1949, a role in which he oversaw the initiation of construction of the Missouri River dams as part of the Pick-Sloan Missouri Basin Program.<sup>6</sup> Given his technical expertise and his role in the negotiations, Pakistan explored the possibility that his archives might contain material that would shed

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<sup>1</sup> Capitalised terms used but not defined in this Appendix shall have the meanings given to them in Pakistan’s Memorial.

<sup>2</sup> A full list of the documents contained within the World Bank’s archive is publicly available at <https://thedocs.worldbank.org/en/doc/30b6e86fe9d76caf7085ec8cd168bf52-0240022021/original/Archives-mediation-exhibit-Indus-folder-list-with-hyperlinks.pdf> (last accessed 18 March 2024), and was produced as **Exhibit P-0121** to Pakistan’s Response.

<sup>3</sup> Register of the Raymond Albert Wheeler papers, 1898-1977, Collection Number 78062, Hoover Institution Library and Archives (annotated by counsel for Pakistan), **Exhibit P-0370**.

<sup>4</sup> Categories (c) and (d) have been located since filing Pakistan’s Response.

<sup>5</sup> “Gen. Raymond Wheeler Dead; Led Army Corps of Engineers” *The New York Times* (New York, 10 February 1974), available at: <https://www.nytimes.com/1974/02/10/archives/gen-raymond-wheeler-dead-led-army-corps-of-engineers-built-ledo.html> (last accessed 18 March 2024), **Exhibit P-0371**.

<sup>6</sup> *Id.*; M. R. Patterson, “Raymond Albert Wheeler – Lieutenant General, United States Army”, (*Arlington National Cemetery*, 18 December 2023), available at: <https://www.arlingtoncemetery.net/rawheel.htm> (last accessed 18 March 2024), **Exhibit P-0372**.

additional light on technical aspects of the Treaty, especially Annexure D. Upon review, however, only a handful of extracts from the collection turned out to be relevant. They are provided with Pakistan’s Memorial.

4. As set out in more detail in **Section 4** of this **Appendix A**, a number of conclusions may be drawn from the circumstances of conclusion of the Treaty and the available *travaux* as regards the interpretation and application of Article III and Part 3 of Annexure D of the Treaty, both general and specific.

5. Four principal general conclusions are apparent:

- (a) **First**, it is clear that Pakistan’s concerns regarding a “return to desert” – concerns which had been precipitated by the events of 1948, detailed further in **Section 2** of this **Appendix A** – informed the original proposals for resolution of the water dispute, and pervaded the Treaty negotiations.
- (b) **Second**, one of the key and fundamental conditions on which Pakistan engaged in negotiations leading up to the Treaty was the non-interference by India with or control of the waters of the Western Rivers. This was both facilitated by, and seen by Pakistan as the *quid pro quo* for, the division of waters (Eastern Rivers to India, Western Rivers to Pakistan).
- (c) **Third**, exceptions to the principle of India’s non-interference with or control of the waters of the Western Rivers were fiercely contested and, ultimately, tightly constrained. This is no great surprise, given the fundamental condition of non-interference on which basis Pakistan engaged with the negotiations.
- (d) **Fourth**, with few exceptions (which are set out in summary form in the following paragraph, and in more detail at **Sections 4B** and **4C** of this **Appendix A**), the negotiating history and available *travaux* of the Treaty cast little further light on the meaning of the specific Treaty provisions at issue in these proceedings, most notably those in Annexure D.

6. Notwithstanding the overarching conclusion that the negotiating history and the available *travaux* of the Treaty cast little light on the meaning of the Treaty provisions with which the Court of Arbitration is most directly concerned here, a small number of specific

conclusions may be drawn from recourse to the *travaux* and circumstances of the conclusion of the Treaty. In particular:

- (a) **First**, throughout the negotiations, the pivotal “let flow” principle remained relatively constant. Importantly, however, the principle moved from a declaration that the “entire flow of the Western rivers” would be “available for the exclusive use and benefit of Pakistan” to becoming a binding and positive “obligation” on India to “let flow all the waters of the Western Rivers”, in what became Article III of the Treaty. A provision for a carve-out from the “let flow” obligation for India’s generation of hydro-electric power on the Western Rivers was included for the first time in the Heads of Agreement 1959.<sup>7</sup>
- (b) **Second**, the language giving India the ability to utilise the Western Rivers for the generation of hydroelectric power evolved from that of “right” (in the Heads of Agreement 1959), to that of an “exception” to its positive and binding obligation to “let flow” (in the first full drafts of the Treaty until the final version).
- (c) **Third**, the negotiations of what became Annexure D of the Treaty appear to have taken place largely in the summer of 1959, but with no developed draft of that Annexure appearing in the World Bank archives until April 1960.<sup>8</sup> The term “pondage” seems to have been introduced for the first time by a Pakistan draft of 15 August 1959.<sup>9</sup> It was described in the Heads of Agreement 1959,<sup>10</sup> and separately defined—broadly consistently with the description of the term in the Heads of Agreement 1959—for the first time in the April 1960 draft of Annexure D (see paragraph 47 below).<sup>11</sup> The concept of “load”, which found its way into the definition of “Pondage” in Paragraph 2(c) of Annexure D, was never defined. The *travaux* shed little light on what the Parties intended to be the meaning of Paragraph 8(c) of Annexure D, or indeed of other provisions of

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<sup>7</sup> Heads of Agreement 1959, **Exhibit P-0136**.

<sup>8</sup> Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers, draft of 23 April 1960 (“**April 1960 draft of Annexure D**”), **Exhibit P-0476**.

<sup>9</sup> Letter from Mr Mueenuddin to Mr W. A. Sheikh (with enclosures), 17 August 1959, **Exhibit P-0365**, Enclosure II – Draft given by Pakistan on Hydel formula on 15.8.59, ¶ 2(b).

<sup>10</sup> Heads of Agreement 1959, **Exhibit P-0136**, Annex B, ¶ 2.

<sup>11</sup> April 1960 draft of Annexure D, **Exhibit P-0476**, ¶ 5 (c).

Paragraph 8.

- (d) **Fourth**, the evolution of the drafting of Annexure D in terms of the criteria for the design, construction and operation of new Run-of-River HEPs indicates some consideration by the Parties at the time of the interrelation of those criteria. In particular, Annex B of the Heads of Agreement 1959, had divided up its provisions under sub-titles for “Design” and “Operation”, etc. These sub-titles were removed in subsequent full drafts, and the final version, of Annexure D.
- (e) **Fifth**, the requirement that India provide Pakistan with information about its new Run-of-River HEP plans, enabling Pakistan to police India's compliance with Annexure D, was a constant feature of all drafts of Annexure D (from its initial incarnation as Annex B to the Heads of Agreement 1959). The information that India was required to provide remained largely constant.

7. Following this Introduction, the structure of this **Appendix A** is as follows:

- (a) **Section 2** provides an overview of the historical origins, and circumstances of conclusion of, the Treaty;
- (b) **Section 3** explains the relevance to the interpretation of the Treaty of the materials to which reference is made in subsequent Sections of this **Appendix A**;
- (c) **Section 4** then sets out conclusions as regards the interpretation of Article III and Paragraph 8 of Annexure D in the light of the *travaux préparatoires* and circumstances of conclusion of the Treaty;
- (d) **Section 5** provides an overview of the negotiating history of the Treaty from the Bank proposal of 1954 onwards, with a focus on Article III and Annexure D;
- (e) **Annex I** to this **Appendix A** provides a list of key documents relevant to the interpretation and application of Article III and Paragraph 8, Annexure D of the Treaty; and
- (f) **Annex II** provides a *dramatis personae* relating to the negotiating history of the

## Pakistan's Memorial – Appendix A

Treaty. Those individuals most central to the negotiating history are the following:

Name	Role
Mr David E. Lilienthal	Independent
Mr Eugene Black	President, World Bank
Mr William B. Iliff	Vice President, World Bank
General Raymond Albert Wheeler	Head of the World Bank's delegation to the Working Party Leader of the World Bank's group of technical experts
Mr Niranjan Das Gulhati	Assistant in India's delegation to the Working Party (at the time, Chief of the Natural Resources Division of India's Planning Commission and Deputy Secretary to the Ministry of Natural Resources and Scientific Research) Subsequently, from November 1954, Head of India's Delegation in the negotiations Additional Secretary to the Government of India, Ministry of Irrigation and Power
Mr Ghulam Mueenuddin	Head of Pakistan's delegation in the negotiations (1954-1960) Secretary to the Government of Pakistan, Ministry of Fuel, Power and Natural resources



## 2. THE HISTORICAL ORIGINS AND CIRCUMSTANCES OF CONCLUSION OF THE INDUS WATERS TREATY

8. It is critical for a proper appreciation of the *travaux* of the Treaty to understand the historical circumstances in which the Treaty was concluded (for reasons of the law of treaty interpretation, as explained in **Section 3**). This **Section 2** describes the broad historical context in which negotiations between India and Pakistan, under the good offices of the World Bank, commenced in 1954. That historical context is also set out, at a high level, in **Chapter 7A** of Pakistan’s Memorial.

9. The early history of the Treaty is recounted in the *Kishenganga* Partial Award. As the Court explained, the need for a treaty regulating the use of the waters of the Indus system of rivers arose in 1947 with the independence of India from Britain and its partition into the Dominion of Pakistan (now the Islamic Republic of Pakistan and the People’s Republic of Bangladesh) and the Union of India (now the Republic of India). Before Partition, use of the waters was negotiated between the relevant provinces and states of British India, and any disputes were resolved by the British Secretary of State for India, and later by the Government of India. After Partition, parts or all of the upper reaches of the six main rivers of the Indus system were located in India, with their downstream stretches flowing through Pakistan. A temporary agreement for the allocation of the use of these waters between East Punjab (an Indian state from 1947 to 1956) and West Punjab (a province of Pakistan from 1947 to 1955) expired on 31 March 1948.<sup>12</sup>

10. The “water dispute”, as it was called at the time, began on 1 April 1948, the day after the expiration of that temporary agreement between East Punjab and West Punjab. That day, “India cut off the flow of water in every irrigation canal which crossed the India-Pakistan boundary and demanded that Pakistan recognize that ‘the proprietary rights in the waters of the rivers in East Punjab vest wholly in the East Punjab Government and that the West Punjab Government cannot claim any share of these waters as a right.’”<sup>13</sup> The flow of water was restored in May 1948 under a temporary arrangement, in return for the agreement of the West Punjab Government (under duress) to “deposit in escrow ‘such ad hoc sum as may be specified

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<sup>12</sup> *Kishenganga* arbitration, Partial Award, **PLA-0003**, ¶¶ 130–131 (citations omitted).

<sup>13</sup> Government of Pakistan, “The Indus Basin Irrigation Water Dispute”, 8 December 1952, **Exhibit P-0350**, ¶ 7.

by the Prime Minister of India ...”<sup>14</sup>

11. Between 1948 and 1951, Pakistan attempted but failed to reach a permanent agreement with India on arrangements for their sharing or joint development of the rivers of the Indus basin.<sup>15</sup> India refused Pakistan's request to submit their dispute to the ICJ, or to other third-party dispute settlement mechanism. It was clear to Pakistan “that India's purpose was to prolong negotiations until construction of new irrigation canals and other engineering works in India had been completed, at which time those facilities would be used to deprive Pakistan of supplies of water upon which the country is totally dependent.”<sup>16</sup>

12. In 1951, Mr David Lilienthal, an authority in the field of regional development, who had been head of the seven-state Tennessee Valley Authority<sup>17</sup> and Chairman of the United States Atomic Energy Commission, visited India and Pakistan on the invitation of both Governments.<sup>18</sup> He published an article in *Collier's Magazine* (a popular American general interest magazine) on 4 August 1951, in which he summarised the findings of his trip and made proposals for the resolution of the water dispute (the “**1951 Lilienthal proposal**”). He regarded the existential threat posed by India's control over waters on which Pakistan's people were reliant as one of the most important elements of the dispute. He observed that:

“Pakistan includes some of the most productive food-growing lands in the world in western Punjab [...] and the Sind. But without water for irrigation this would be desert, 20,000,000 acres would dry up in a week, tens of millions would starve. No army, with bombs and shellfire, could devastate a land as thoroughly as Pakistan could be devastated by the simple expedient of India's permanently shutting off the sources of water that keep the fields and the people of Pakistan alive. India has never threatened such a drastic step, and indeed denies any such intention – but the power is there nonetheless.”<sup>19</sup>

13. He also observed in the Pakistani people the lasting effects of the incident of 1948:

“I saw the source of water supply for Lahore and the surrounding farming country near the border when (probably for some operating reason) India had cut down the flow; every passer-by could see how low the canal's waters had fallen. An hour later I talked to Pakistanis so furious and worried they were ready to fight with their bare hands. Later in the day, the waters were up again; but the fear was still there. In the spring of

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<sup>14</sup> *Id.*, ¶ 11, referring to a Joint Announcement of 4 May 1948 on the temporary arrangement to resolve the crisis which had begun on 1 April 1948.

<sup>15</sup> *Id.*, ¶ 12.

<sup>16</sup> *Id.*.

<sup>17</sup> See further, **Chapter 2A** of Pakistan's Memorial.

<sup>18</sup> Government of Pakistan, “The Indus Basin Irrigation Water Dispute”, 8 December 1952, **Exhibit P-0350**, ¶ 13. See also, **Chapter 7B.1** of Pakistan's Memorial.

<sup>19</sup> Lilienthal, 1951, **Exhibit P-0233**, pp. 7–8.

1948, during international negotiations as to the allocation of water for irrigation, India cut off most of the supply of water to Pakistan for a month, causing distress, loss of crops and general disruption. This rankles and makes Pakistan fearful of the future.”<sup>20</sup>

14. Mr Lilienthal saw first-hand India's expansive canal-building and irrigation program. He commented that “[m]ost of this new withdrawal of water will come from rivers or canals within India which would otherwise flow on to Pakistan”.<sup>21</sup> He visited one dam that was capable of storing “the entire flow of the Sutlej River for a year”.<sup>22</sup>

15. He proposed a resolution to the problem involving the shared management of the waters:

“Pakistan's position [that it has “the legal right to the uninterrupted flow of water, a right to a share of waters stored by India's dams upstream”], though inadequate, should be the starting point, should be accepted as a minimum, without question.

The starting point should be [...] to set to rest Pakistan's fears of deprivation and a return to desert. Her present use of water should be confirmed by India, provided she works together with India (as I believe she would) in a joint use of this truly international river basin on an engineering basis that would also (as the facts make clear it can) assure India's future use as well.”<sup>23</sup>

16. Mr Lilienthal's article was widely distributed. It caught the attention of Mr Lilienthal's close friend, the then-President of the World Bank, Mr Eugene R. Black.<sup>24</sup> In September 1951, Mr Black wrote to Pakistan and India to offer the good offices of the Bank in developing an approach to the management of the Indus water resources along the lines suggested by Mr Lilienthal.<sup>25</sup> The two countries quickly accepted.<sup>26</sup>

17. On 8 November 1951, Mr Black put forward a formal proposal to commence negotiations on the basis of three “essential principles of Mr Lilienthal's proposal”, namely:

“(a) The Indus basin water resources are sufficient to continue all existing uses and to meet the further needs of both countries for water from that source.

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<sup>20</sup> *Id.*, p. 8.

<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

<sup>23</sup> *Id.*, p. 9.

<sup>24</sup> Michel, 1967, **Exhibit P-0234**, p. 224.

<sup>25</sup> Letter from Mr Black to Prime Minister Khan, 6 September 1951, **Exhibit P-0354**; Letter from Mr Black to Prime Minister Nehru, 6 September 1951, **Exhibit P-0355**.

<sup>26</sup> Michel, 1967, **Exhibit P-0234**, p. 225.

(b) The water resources of the Indus basin should be cooperatively developed and used in such manner as most effectively to promote the economic development of the Indus basin viewed as a unit.

(c) The problem of development and use of the Indus basin water resources should be solved on a functional and not a political plane, without relation to past negotiation and past claims and independently of political issues.”<sup>27</sup>

18. Mr Lilienthal remained engaged in the background during this period, and wrote to Dr A. N. Khosla, Prime Minister Nehru's chief engineering adviser and India's Additional Secretary, Ministry of Natural Resources and Scientific Research, following on from Mr Black's November 1951 letter.<sup>28</sup> He stressed the lack of “explicitness” in Mr Black's letters of 8 November 1951 of reference to the key issue identified in his *Collier's* article, of Pakistan's concerns regarding a “return to desert”.<sup>29</sup> Mr Lilienthal recalled his previous discussions with Dr Khosla on this issue:

“[Y]ou stated that this point, as I made it in my article and proposal, had been brought up and discussed with your Prime Minister. The purport of what you told me was that Mr. Nehru had stated that he had no intention to build the well-being of the people of East Punjab on the misery and suffering of the common people of West Punjab. Take the case of ordinary farmers of Pakistan, feeding themselves and their families on land that now and prior to Partition had been irrigated by the waters of the Indus. Need they fear that the quantity of water would be cut down by India, while these discussions of a joint plan were under way?

[...] Unless I wholly misunderstood you, you assured me that no such diminution and no such privation would occur; on the contrary, the whole purpose of India would be to increase the prosperity and livelihood of both the farmers of India and of Pakistan.”<sup>30</sup>

19. Both negotiating parties eventually accepted the Bank's invitation and, notwithstanding certain proposed modifications, the principles set out in Mr Black's letter of 8 November 1951 provided “the broad basis on which the engineers [were to] meet”.<sup>31</sup> It was agreed that the function of the working party of engineers, just as Mr Lilienthal had proposed, would be:

“[T]o work out, and the ultimate objective is to carry out, specific engineering measures by which the supplies effectively available to each country will be increased substantially beyond what they have ever been. [...] [They also agreed that] while the

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<sup>27</sup> Letter from Mr Black to Prime Minister Nazimuddin, 8 November 1951, **Exhibit P-0356**; Letter from Mr Black to Prime Minister Nehru, 8 November 1951, **Exhibit P-0357**.

<sup>28</sup> See generally, Michel, 1967, **Exhibit P-0234**, p. 226.

<sup>29</sup> Letter from Mr Lilienthal to Dr Khosla, 13 December 1951, **Exhibit P-0358**, p. 4.

<sup>30</sup> *Id.*, pp. 4–5.

<sup>31</sup> Letter from Mr Black to Prime Minister Nazimuddin, 13 March 1952, **Exhibit P-0360**.

cooperative work continues with the participation of the Bank neither side will take any action to diminish the supplies available to the other side for existing uses.”<sup>32</sup>

20. The first meeting of the Working Party – a group of leading technical experts from Pakistan, India and the Bank – was held on 7 May 1952.<sup>33</sup> Two years of discussions in the working party had culminated in agreement on certain issues.<sup>34</sup> However, in early 1954, the Bank was forced to conclude that efforts to agree a “common approach [...] proved fruitless”,<sup>35</sup> and “in the absence of some new development, there [was] no prospect of further progress in the Working Party”.<sup>36</sup>

21. The reasons for the failure of negotiations based on the 1951 Lilienthal proposal were set out in detail in the Bank's Memorandum of 5 February 1954.<sup>37</sup> The failure to find a mutually agreeable solution was not for want of technical data.<sup>38</sup> Rather, the reasons for the impasse at that point in time related to “three basic difficulties which [had] so far prevented the Working Party from reaching the heart of the problem – a fair division of the waters between the two countries.”<sup>39</sup> Those three basic difficulties were the following:

(a) **First**, the fact that “water supplies and storage potentialities are inadequate to the needs of the basin.”<sup>40</sup> The Bank Memorandum observed that:

“The Indus is one of the world's greatest river systems. With proper development by engineering works, it is capable of providing substantially more

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<sup>32</sup> *Id.*. An identical letter was sent to India.

<sup>33</sup> *Id.*; Note from Neil Bass to Files, “Indus Basin Conference”, 7 May 1952, **Exhibit P-0373**; World Bank Press Release No. 289, 1 May 1952, **Exhibit P-0374**. The Indian delegation to the Working Party was led by Dr Khosla, assisted by Mr N. D. Gulhati, Chief of the Natural Resources Division of India's Planning Commission and Deputy Secretary to the Ministry of Natural Resources and Scientific Research, and Dr J. K. Malhotra, Officer on Special Duty in that Ministry. The Pakistan delegation was led by M. A. Hamid, who had served as Chief Engineer, Irrigation, of the West Punjab from 1947 to 1952. He was assisted by four advisors. The World Bank's team was headed up by General Wheeler. (Michel, 1967, **Exhibit P-0234**, pp. 228–229).

<sup>34</sup> The Working Party reached agreement on, *inter alia*, the following issues: (a) that average annual flow is not sufficiently dependable to be taken as a basis for planning and that some more conservative figures must be used; (b) the amount of usable supplies in the rivers and the amount that could be developed through storage; (c) that existing uses of water must be respected; and (d) that surplus usable supplies, including supplies that can be developed through storage, must be equitably apportioned among the potential new uses (1954 Proposal, **Exhibit P-0130**, ¶ 7).

<sup>35</sup> 1954 Proposal, **Exhibit P-0130**, ¶ 1. See further, “The Indus Basin Waters Dispute, A Report by the Bank Representatives and Associates”, 8 February 1954, **Exhibit P-0375**; “The Development and Use of the Indus River and Tributaries in India and Pakistan, A Report by the Bank Representative and Associates”, 26 February 1954, **Exhibit P-0376**.

<sup>36</sup> 1954 Proposal, **Exhibit P-0130**, ¶ 4.

<sup>37</sup> 1954 Proposal, **Exhibit P-0130**.

<sup>38</sup> On the contrary, the 1954 Proposal recorded that “[i]t is doubtful whether such complete recorded flow data as exists for the Indus system of rivers and canals could be duplicated for any comparable river system in any other country.” *Id.*, ¶ 6.

<sup>39</sup> *Id.*, ¶ 8.

<sup>40</sup> *Id.*, ¶ 9.

irrigation to each country than has ever been enjoyed. But even after full development, there will not be enough water to supply all the needs of the area.”<sup>41</sup>

- (b) **Second**, that “two sovereign states are involved”, which “greatly limit[ed] the practical potentialities of planning” (in contrast to the “potentialities” of a “comprehensive plan [...] developed and administered by a single authority”<sup>42</sup>). Accordingly, the “prospects of being able to establish an efficient and smooth-running joint administration [were] not favorable.”<sup>43</sup>
- (c) **Third**, the “most serious” difficulty related to the fact that Pakistan and India had each presented their own “comprehensive plan”, which envisaged a division (to varying degrees in each plan) of the “usable supplies” of each of the Eastern rivers and Western rivers between India and Pakistan.<sup>44</sup> These plans “differ[ed] fundamentally in concept.”<sup>45</sup> Pakistan’s plan envisaged that “existing uses” of water (which would include not only water that had actually been used, but also allocations of water which had been sanctioned prior to Partition even if not actually available for use) must be continued from “existing sources”.<sup>46</sup> India’s plan, on the other hand, protected existing uses (defined to include only “actual historic withdrawals”), but did not link them to existing sources. In other words, India’s concept “permit[ted] the water in the Eastern rivers which is now used in Pakistan to be released for use in India and replaced by water from the Western rivers.”<sup>47</sup>

22. In its memorandum, the Bank observed that any proposal that the Bank might itself put forward would have to tackle “at the outset” the “treatment of existing uses”.<sup>48</sup> The proposed solution subsequently offered up by the Bank in February 1954 underpins the grand bargain reflected in the Treaty. It is described further in **Section 5A** below.

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<sup>41</sup> *Id.*

<sup>42</sup> *Id.*, ¶ 11.

<sup>43</sup> *Id.*, ¶ 13.

<sup>44</sup> *Id.*, ¶¶ 1-2.

<sup>45</sup> *Id.*, ¶ 14.

<sup>46</sup> *Id.*

<sup>47</sup> *Id.*, ¶ 15.

<sup>48</sup> *Id.*, ¶ 21.

**3. THE RELEVANCE TO THE INTERPRETATION OF THE TREATY OF THE MATERIALS TO WHICH REFERENCE IS MADE IN THIS APPENDIX A**

23. The relevance of the materials considered in this **Appendix** to the Court's task of interpreting the Treaty is governed by the rules of treaty interpretation under international law, most notably Article 32 of the VCLT.

24. Article 32 (*Supplementary means of interpretation*) of the VCLT provides that:

“Recourse may be had to supplementary means of interpretation, including the preparatory work of the treaty and the circumstances of its conclusion, in order to confirm the meaning resulting from the application of article 31, or to determine the meaning when the interpretation according to article 31:

- (a) leaves the meaning ambiguous or obscure; or
- (b) leads to a result which is manifestly absurd or unreasonable.”

25. Pursuant to Article 32, recourse may therefore be had to the “preparatory work” of the Treaty “and the circumstances of its conclusion” in order to confirm the meaning of Article III, and the relevant provisions of Annexure D, resulting from the application of the “general rule of interpretation” under Article 31 VCLT;<sup>49</sup> or to determine the meaning of those provisions when the interpretation according to Article 31, (a) leaves the meaning ambiguous or obscure or (b) leads to a result which is manifestly absurd or unreasonable. Resort may be had, more generally, and in the same circumstances, to “supplementary means of interpretation” other than the “preparatory work” of a treaty and the “circumstances of its conclusion”. The application of Article 32 VCLT is also addressed in **Chapter 8A.4** of this Memorial.

26. Many of the materials referred to in this **Appendix A** do not constitute “*travaux*” in a strict sense. As Pakistan explained in its Response, although there is “no recognized definition in international law of *travaux préparatoires*”, there are several conditions which “must be fulfilled before the material in question can be considered *travaux*”.<sup>50</sup> Among these are the need for the documents to have been “generated by the negotiating states during the preparation of the treaty up to its conclusion” and the need for the material in question to have been “present

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<sup>49</sup> *I.e.*, interpretation in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose, addressed more fully in **Chapter 8** of this Memorial.

<sup>50</sup> Pakistan's Response, Appendix C, ¶ 14, quoting from O. Dörr & K. Schmalenbach (eds.), *Vienna Convention on the Law of Treaties: A Commentary* (Springer, 2<sup>nd</sup> ed. (2018)), **PLA-0019**, pp. 620–621.

in the negotiating process and available to the negotiators collectively”.<sup>51</sup>

27. As regards drafts of the Treaty to which reference has been made in this **Appendix**, the majority of them were prepared by the Bank, rather than either of the negotiating States. Those prepared by either Pakistan or India and shared with the other are clearly to be considered “*travaux*”. As regards drafts prepared by the Bank, their relevance under Article 32 VCLT was discussed at the Hearing on the Merits in the *Kishenganga* arbitration. Sir Franklin Berman KCMG QC (now KC), one of the arbitrators on the Court of Arbitration and an eminent public international lawyer, asked Pakistan what its position was “on the general approach towards the interpretation of a treaty produced by a third party, by a good officer third party”, in “circumstances in which drafts are in principle produced by a third party, and not by the ultimate treaty parties”.<sup>52</sup>

28. Professor Crawford (for Pakistan) responded that the answer “depends on how successful the good officer has been”; and in the case of the Treaty, it was “a very successful achievement”.<sup>53</sup> Professor Lowe (also for Pakistan) added that, although drafts produced by a third party may be relevant as *travaux*, the context of drafts being “in principle produced by a third party, and not by the ultimate treaty parties”, militates strongly in favour of respect for the plain terms of the Treaty.<sup>54</sup>

29. As regards communications between the Bank and one of the negotiating parties, this **Appendix A** makes reference to a significant number of such communications. The relevance of such documents to the interpretation of the Treaty was discussed at a number of junctures in the Hearing on the Merits in the *Kishenganga* arbitration. In particular, while making reference to a Letter from the Vice President of the Bank, Mr Iliff, to the Pakistan Finance Minister of 6 February 1960,<sup>55</sup> Professor Crawford, stated “by way of parenthesis” that:

“[A]lthough that is a communication from the good officer to one of the parties, it seems to me and I would submit that it constitutes part of the *travaux* of the treaty.

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<sup>51</sup> O. Dörr & K. Schmalenbach (eds.), *Vienna Convention on the Law of Treaties: A Commentary* (Springer, 2<sup>nd</sup> ed. (2018)), **PLA-0019**, p. 621 (emphasis omitted).

<sup>52</sup> Transcript, Hearing on the Merits (*Kishenganga* arbitration), Day 3, **Exhibit P-0125**, p. 199, lines 5 to 13 (Sir Franklin Berman).

<sup>53</sup> *Id.*, p. 200, lines 18-20 (Professor Crawford).

<sup>54</sup> *See*, generally, Transcript, Hearing on the Merits (*Kishenganga* arbitration), Day 4, **Exhibit P-0126**, p. 4, line 4 to p. 6, line 14 (Professor Lowe).

<sup>55</sup> Letter from Mr Iliff to Finance Minister Shoaib, 6 February 1960, **Exhibit P-0367** (which had been produced as PK-16 to Pakistan's Memorial (*Kishenganga* arbitration)).



In a situation where you have good offices being exercised by an independent party, and in particular where there is evidence that the good officer is even-handed in his dealings, individual communications with individual parties should be regarded as part of the *travaux*, unless there is an indication that that document was in any way secret. But although Mr Iliff didn't always make the same communication at identical times to the parties, he was scrupulous in keeping them all informed, and I think that letter is therefore able to be taken into account."<sup>56</sup>

30. Pakistan maintains that this is correct: a case-by-case approach is required for the determination of whether any given communication between the Bank and one (but not the other) of the parties constitutes "*travaux*" in the strict sense.

31. As regards correspondence internal to Pakistan or its external advisers, to which this **Appendix A** also makes reference, this clearly does not satisfy the conditions to be considered *travaux*, set out at paragraph 26 above. However, arguably any material that is not strictly part of the negotiating process can be taken into account in the process of interpretation as "supplementary means":<sup>57</sup> the weight placed on that material will obviously depend on its precise nature. Indeed, the *Kishenganga* Court itself relied on materials internal to India in confirming its interpretation of Paragraph 15(iii) of Annexure D, finding that "Article 32 of the VCLT was not meant to close the category of supplementary means that may be utilized in treaty interpretation to those enumerated therein."<sup>58</sup>

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<sup>56</sup> Transcript, Hearing on the Merits (*Kishenganga* arbitration), Day 3, **Exhibit P-0125**, p. 153, line 19 to p. 154, line 8 (Professor Crawford).

<sup>57</sup> See O. Dörr & K. Schmalenbach (eds.), *Vienna Convention on the Law of Treaties: A Commentary* (Springer, 2<sup>nd</sup> ed. (2018)), **PLA-0019**, p. 627, ¶¶ 26 and 27 (and their conclusion that "it basically depends on the assessment of the interpreter whether the material in question can reasonably be thought to assist in establishing the meaning of the treaty under consideration, and if it does, there are scarcely any clear limits to taking it into account under Art 32.").

<sup>58</sup> *Kishenganga* arbitration, Partial Award, **PLA-0003**, ¶ 380, fn. 586, citing *HICEE B.V. v. the Slovak Republic*, PCA Case No. 2009-11, Partial Award, 23 May 2011, **PLA-0050**, at ¶¶ 117 and 135.

**4. SUMMARY OF CONCLUSIONS DRAWN FROM THE *TRAVAUX* OF THE TREATY AND THE CIRCUMSTANCES OF ITS CONCLUSION**

32. This Section sets out a number of overarching conclusions that can be drawn from the *travaux* of the Treaty and the circumstances of its conclusion, with reference (where applicable) to subsequent Sections or paragraphs of this Appendix in which further details are provided. It does so as follows:

- (a) **First**, it makes a number of general observations regarding the conduct of negotiations and India's gradual encroachment on its pivotal obligation to "let flow" the Western Rivers (**Section 4A**);
- (b) **Second**, it analyses in more detail the evolution of the "let flow" obligation and the "exception" for use for the generation of hydro-electric power, eventually set out in detail in Annexure D (**Section 4B**); and
- (c) **Third**, it analyses in more detail the evolution of the relevant provisions of Annexure D, from the draft of April 1960 to the final text signed in September 1960 (**Section 4C**).

**A. THE CONDUCT OF NEGOTIATIONS AND INDIA'S GRADUAL ENCROACHMENT ON ITS FUNDAMENTAL OBLIGATION TO "LET FLOW" THE WESTERN RIVERS**

**1. Pakistan's concerns regarding a "return to desert"**

33. A fundamental aspect of the original "water dispute" between Pakistan and India, which led to the negotiation of the Treaty, was Pakistan's concerns over the existential threat posed by India's control over waters on which Pakistan's people were reliant (see paragraphs 10-18 above). These concerns arose primarily out of the April 1948 crisis, but were brought back into sharp focus whenever unexplained water shortages occurred. The concern of Pakistan to secure the quality and timing of its water flows is therefore a common thread throughout the negotiations.

**2. Pakistan's fundamental condition for engaging in the negotiations towards a Treaty**

34. The bargain originally proposed in the Bank's 1954 Proposal<sup>59</sup> envisaged Pakistan's permanent relinquishment of its rights over the Eastern Rivers (see generally, **Section 5A** below).<sup>60</sup> In return, Pakistan was to receive the unequivocal surrender of India's rights over the Western Rivers. This proposal was designed, in part, to give the parties "mutual independence" and exclusivity (see paragraph 68 below).

35. One of the key conditions on which basis Pakistan engaged in the negotiations was the non-interference by India with or control of the waters of the Western Rivers (see generally, **Section 5C** below); i.e., that India should not alter the flow either in quantity or timeliness of the Western Rivers as they pass into Pakistan, and that India may only construct obstructions on the Western Rivers in India with Pakistan's consent. Given the historical context of the treaty negotiations, water independence was (and remains) of fundamental concern to Pakistan.

**3. The exceptions to "non-interference" were heavily contested**

36. Any exceptions to India's let flow and non-interference obligations with regard to the Western Rivers, the countervailing obligation for Pakistan's let flow obligation in respect of the Eastern Rivers, were precisely that – exceptions. The only such exception envisaged at the outset was set out in a reservation made by India to the Bank's 1954 Proposal, namely, that provision would need to be made for future local developments in India that involved nothing more than "relatively insignificant consumptive uses" (which did not include the construction of new major works, such as storages, dams, tunnels, etc.) of the Western Rivers.<sup>61</sup>

37. Over the course of negotiations, India sought to make inroads into the fundamental starting point of the negotiations – that the "entire flow" of the Western Rivers would be for Pakistan. Pakistan gave ground – often under pressure from the Bank – only in certain specific, tightly constrained, respects. Most notably for present purposes, Pakistan ultimately conceded a limited right for India to construct HEPs on the Western Rivers, and agreed withdrawals and

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<sup>59</sup> 1954 Proposal, **Exhibit P-0130**.

<sup>60</sup> See also, paragraphs 76–78, 81–82, and 91–104 below.

<sup>61</sup> See paragraph 69 below (referring to letter from Dr Khosla to Gen. R. A. Wheeler, 25 March 1954, **Exhibit P-0377**). See also paragraphs 73–75, 77–79, 84–87, 91–101, and 129–130 below.

specific storage capacities as set out in Annexures C and E (see generally, **Section 5C** below).<sup>62</sup>

**4. With a few exceptions, the negotiating history casts little light on the meaning of the terms in Annexure D**

38. Although it is possible to piece together from the World Bank's archives the overall conduct of negotiations, and major flashpoints in them, there is a lack of detail on important aspects of the Treaty. As Professor Lowe (for Pakistan) said in his submissions to the *Kishenganga* Court, "although the travaux has a reasonable collection of drafts of provisions which go in, there is nothing really in the way of an explanation of the debates that attend things. So conclusions on why a particular provision has changed are almost always speculative."<sup>63</sup>

39. At first glance, the lack of detail surrounding the evolution of drafts of the Treaty is surprising. Authors who have researched and written on the negotiations have sought to find reasons for the scarcity of detail. Dr Alam, in his DPhil thesis entitled *Water Rationality: Mediating the Indus Waters Treaty*, offers one explanation from his research. He recalls that:

"The Bank's President had a policy, during the Indus Basin talks, of only putting the minimal amount of discussion on paper so as to allow more flexibility:

'People like Gene Black [i.e., the President of the Bank] felt [...] that if you want to have a difficult negotiation avoid writing too much down. You may write down some basic facts like the flow of water of the rivers and things like that, but don't write down, he wants this and he wants that and he's willing to concede, I think you have to do it...(a) you have to do it without being too clear about everything...that guides you, and secondly, one of the principle things in the Bank meditation role was no publicity....no body make any statements outside' [Sommers interview, 30/4/96].

An example of this policy's implementation by the World Bank, is a meeting between the institution and the Pakistani delegation [IBRD-2/7/56]. The Bank's representative at that meeting wanted a Pakistani delegate to feel free to talk without restraint, and so did not take notes during the meeting."<sup>64</sup>

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<sup>62</sup> A provision for an exception to the "let flow" obligation for India's generation of hydro-electric power on the Western Rivers was included in the Heads of Agreement 1959. From that point onwards, in contrast to the drafts exchanged in August 1959 and discussions before that time, drafts of the Treaty began to carve out India's hydro-electric uses of the Western Rivers from the definition of "non-consumptive uses" (paragraph 137 below).

<sup>63</sup> Transcript, Hearing on the Merits (*Kishenganga* arbitration), Day 8, 29 August 2012, **Exhibit P-0127**, p. 20, line 25 to p. 21, line 5 (Professor Lowe).

<sup>64</sup> Alam, 1998, **Exhibit P-0245**, p. 178, quoting Mr Davidson Sommers, who had been General Counsel of the World Bank during the negotiations, in an interview conducted by the author on 30 April 1996 (see *id.* at pp. 25–26).

40. The Bank’s apparent “policy” goes some way to explain, for instance, the lack of clarity in the archives as to the emergence and evolution of important terminology of Annexure D during the course of the negotiations (see further in the following **Sections 4B** and **4C**).

**B. THE EVOLUTION OF THE “LET FLOW” OBLIGATION AND THE “EXCEPTION” FOR USE FOR THE GENERATION OF HYDRO-ELECTRIC POWER SET OUT IN ANNEXURE D**

41. Throughout the negotiations, the fundamental “let flow” principle remained constant. Importantly, however, the principle moved from an expression of the “entire flow of the Western rivers” being “available for the exclusive use and benefit of Pakistan” (in the Bank’s 1954 Proposal, see paragraph 65 below) to being expressed as an “obligation” on India to “let flow all the waters of the Western Rivers”, in what became Article III of the Treaty (paragraphs 155-157 below).

42. A provision for a carve-out from the “let flow” obligation for India’s generation of hydro-electric power on the Western Rivers was included in the Heads of Agreement 1959.<sup>65</sup> Initially this was couched in language of an “entitlement” of India (in Article IV(2) of Annex B of the Heads of Agreement 1959). By the time of the first drafts of the treaty, however, it took the form of a headline statement of obligation subject to a defined exception (India “shall be 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 [...] (d) Generation of hydro-electric power [...]).<sup>66</sup> This shift in language from “entitlement” to “exception” is significant as it points to the primacy of the pivotal “let flow” obligation upon India and, by implication, the limiting character of the exception.

43. The details of what became Annex B (generation of hydro-electric power by India on the Western Rivers) of the Heads of Agreement 1959, were considered in a series of meetings over the course of a number of weeks between August and early September 1959 (**Section 5C.2** below). The Minutes of those meetings give only a high-level sense of what was discussed. However, Pakistan’s contemporaneous internal records show, *inter alia*, that Pakistan “objected [...] strongly” to a formula that had been “worked out” by the Bank and India, which decoupled the “design” and “operation” restrictions on India’s HEP-building (paragraphs 123–125 below). Pakistan’s Representative reported that “we do not want any works to be built

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<sup>65</sup> Heads of Agreement 1959, **Exhibit P-0136**.

<sup>66</sup> December 1959 draft, **Exhibit P-0139**, Article III(2).

which gave India the power to hurt us and that the restriction should be upon the design [i.e., not only operation] of such works.”<sup>67</sup> By mid-August 1959, Pakistan’s Representative reported that all three negotiating parties were agreed on substance and “there should be no real difficulty in finding a formula”<sup>68</sup> for India’s use of the Western Rivers for the generation of hydro-electric power which was acceptable to both the parties (paragraphs 127-128 below).

44. However, such agreement as there was in August 1959 on a formula for run-of-river HEPs was put at risk by new and far-reaching Indian demands for storage on the Western Rivers (paragraphs 129-130 below). On the request of the Bank, Mr Mueenuddin successfully persuaded Pakistan’s President to “reserve judgment” on these issues until a later date,<sup>69</sup> allowing the negotiations on the main text of the Treaty to proceed (paragraphs 131, and 133-134 below). Fierce negotiation on that issue – implicating each of what would become Annexures C, D, and E – took place between January and April 1960 (paragraphs 158-168 below).

45. The first full draft of Annexure D of the Treaty, dated 23 April 1960, appears abruptly, without context or explanation, in the World Bank archives.<sup>70</sup> Correspondence from the time indicates that the parties remained in fierce dispute over the storage demands put forward by India in August 1959 until (at least) just days prior to the appearance of the first full draft of Annexure D (paragraphs 166-169 below). Those demands implicated Annexures C and E in particular, but also Annexure D.<sup>71</sup> One possible conclusion from the chronology of events around this time, and the absence of any record of discussions that led to the April 1960 draft of Annexure D, is that the draft was formulated by the Bank without further reference to the parties (beyond what had already been agreed in the summer of 1959), and put forward as part of its efforts to break the deadlock on each of Annexures C, D and E.

### **C. THE EVOLUTION OF THE RELEVANT PROVISIONS OF ANNEXURE D**

46. The final version of Annexure D contained a number of changes compared to the first

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<sup>67</sup> Letter from Mr Mueenuddin to Mr W. A. Sheikh (with enclosures), 17 August 1959, **Exhibit P-0365**, p. 1.

<sup>68</sup> *Id.*

<sup>69</sup> Letter from Mr Iliff to Mr Black, 24 August 1959 (with enclosures), **Exhibit P-0378**, p. 1.

<sup>70</sup> April 1960 draft of Annexure D, **Exhibit P-0476**.

<sup>71</sup> On 19 April 1960, the Bank had invited both parties to put forward “revised figures” for storage amounts in Annexures C and E. In doing so, Mr Iliff had specifically cautioned India’s Representative that his figures should have regard to the fact that India was being allowed reasonable freedom to construct run-of-river plants (paragraph 166 below). On the other hand, Mr Iliff’s contemporaneous caution to Pakistan’s Representative suggests that storage for hydro-electric purposes remained an open question at this time (paragraph 168 below).

draft of that Annexure, prepared in April 1960.<sup>72</sup> This Section sets out a brief analysis of the most significant among them and their evolution in the drafts of April 1960 and June 1960, before they took shape in the final Treaty signed in September 1960.

## 1. Definitions

47. The important term “pondage” appears to have been introduced for the first time by a Pakistan draft of 15 August 1959 (paragraph 126 below),<sup>73</sup> but there is no contemporaneous discussion of the term in the records. The term also appears in the Heads of Agreement 1959, where it is described as “the [live] storage in the operating pool [...] required to meet fluctuations in the discharge of the turbines arising from variations in the daily or weekly load of the power plant.”<sup>74</sup> The April 1960 draft of Annexure D introduces for the first time a definition of “Pondage”, which is largely consistent with the description in the Heads of Agreement 1959: “‘Pondage’ means storage of only sufficient magnitude to meet fluctuations in the discharge of the turbines arising from variations in the daily and the weekly load of the plant.”<sup>75</sup> The concept of “load”, which found its way into the definition of “Pondage” in Paragraph 2(c) of Annexure D, was first discussed on 13 August 1959 (paragraph 122 below).<sup>76</sup> It was included within paragraph 3.b of Annex B of the Heads of Agreement<sup>77</sup> and all subsequent definitions of “Pondage”. The term itself was never defined.

48. The provision at paragraph 3(b) of the Heads of Agreement 1959, placing a limit on the “volume between the maximum and minimum levels of the operating pool” of “that required to meet the daily or weekly load fluctuations as the case may require” appears to have been included upon Pakistan’s proposal (see paragraph 132 below).<sup>78</sup> That the provenance of the proposal – the progenitor of Paragraphs 8(c) and 2(c) of Annexure D – was Pakistan suggests

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<sup>72</sup> See Redline of Annexure D of the Indus Waters Treaty as against April 1960 draft of Annexure D (created by Counsel for Pakistan for the purposes of this Memorial), **Exhibit P-0522**.

<sup>73</sup> Letter from Mr Mueenuddin to Mr W. A. Sheikh (with enclosures), 17 August 1959, **Exhibit P-0365**, Enclosure II – Draft given by Pakistan on Hydel formula on 15.8.59, ¶ 2(b): “the intake to the power house shall be fixed at such a level that the *pondage* above that level is adequate only to cater for the weekly load factor of the power plant (daily load factor in the case of a power house involving the construction of a dam on the main stem of the Chenab river).” (Emphasis added).

<sup>74</sup> Heads of Agreement 1959, **Exhibit P-0136**, Annex B, ¶ 2 (“A ‘Run-of-River’ plant is a hydro-electric plant at which power is developed without live storage as an integral part of the plant, except for the storage in the operating pool, that is to say, the pondage required to meet fluctuations in the discharge of the turbines arising from variations in the daily or weekly load of the power plant.”).

<sup>75</sup> April 1960 draft of Annexure D, **Exhibit P-0476**, ¶ 5 (c).

<sup>76</sup> World Bank, Minutes of Meeting (Indian representatives), 13 August 1959, **Exhibit P-0456**, ¶ 1(b).

<sup>77</sup> Heads of Agreement 1959, **Exhibit P-0136**, ¶ 3.b.

<sup>78</sup> World Bank, Minutes of Meeting, 8 September 1959, **Exhibit P-0474**, ¶ B.1.

that the provision was intended to have a limiting, rather than an enlarging, effect on India's allowable Pondage.

49. There is no discussion whatsoever in the records of other important concepts such as “firm power”, which appeared for the first time in the April 1960 draft of Annexure D<sup>79</sup> or even later. In its initial incarnation, “Firm Power” was defined simply as “the hydro-electric power corresponding to the minimum 10-daily discharge of the river available at the site in a year of average flow” (April and June 1960 drafts).<sup>80</sup> In the final stages of the negotiations, the negotiating parties agreed a more developed definition, which was maintained in the final version of the Treaty. After an initial amendment to the definition was proposed by India, a further addition (the provenance of which is unknown) was also made, as shown underlined in the following quote:<sup>81</sup>

“‘Firm Power’ means the hydro-electric power corresponding to the minimum mean discharge at the site of a plant, the minimum mean discharge being calculated as follows:

The average discharge for each 10-day period (1st to 10th, 11th to 20th and 21st to the end of the month) will be worked out for each year for which discharge data, whether observed or estimated, are proposed to be studied for purposes of design. The mean of the yearly values for each 10-day period will then be worked out. The lowest of the mean values thus obtained will be taken as the minimum mean discharge. *The studies will be based on data for as long a period as available but may be limited to the latest 5 years in the case of Small Plants (as defined in Paragraph 18) and to the latest 25 years in the case of other Plants (as defined in Paragraph 8).*”<sup>82</sup>

50. The definition of “Run-of-River Plant” underwent a minor drafting change as a result of an amendment proposed by India after the June 1960 draft of Annexure D<sup>83</sup>, resulting in the deletion of the words “in the Operating Pool” in the following definition in the final version of the Treaty: “a hydro-electric Plant that develops power without Live Storage as an integral part of the Plant, except for the Pondage ~~in the Operating Pool~~ and Surcharge Storage”.<sup>84</sup>

51. The definition of “Surcharge Storage” underwent a minor change as between June 1960

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<sup>79</sup> April 1960 draft of Annexure D, **Exhibit P-0476**, ¶ 5(i).

<sup>80</sup> *Id.*, ¶ 5(i); Indus Waters Treaty 1960, Annexure D: Generation of Hydro-Electric Power by India on the Western Rivers (Article III(2)(d)), draft of 6<sup>th</sup> June 1960 (“**June 1960 draft of Annexure D**”), **Exhibit P-0478**, ¶ 2 (i).

<sup>81</sup> Indus Waters Treaty 1960, Annexure D (Draft dated 6<sup>th</sup> June, 1960), Amendments proposed by India, **Exhibit P-0379**, Amendment No. 7.

<sup>82</sup> Indus Waters Treaty 1960, **PLA-0001**, Annexure D, Paragraph 2(i) (emphasis added).

<sup>83</sup> June 1960 draft of Annexure D, **Exhibit P-0478**.

<sup>84</sup> Indus Waters Treaty 1960, Annexure D (Draft dated 6<sup>th</sup> June, 1960), Amendments proposed by India, **Exhibit P-0379**, Amendment No. 2.



and the final version, as follows: “~~the uncontrolled uncontrollable~~ storage temporarily occupying space above the Full Pondage Level”.<sup>85</sup> The definition of “Full Pondage Level”, in turn, was changed from “the top level of the ~~Operating Pool~~ corresponding to the maximum Pondage ~~specified in provided in the design in accordance with Paragraph 8(c).~~”<sup>86</sup>

52. However, the following definitions, which are important for the issues now before the Court, did not change as between the April 1960 draft and the final version: the definitions of “Dead Storage”, “Live Storage”, “Pondage”, “Operating Pool”, and “Secondary Power”.

## 2. The criteria for the design, construction and operation of new Run-of-River HEPs

53. The first full draft of Annexure D, of April 1960, contained at paragraph (6) a provision stating that the following provisions of that part of the Annexure applied to “the construction by India, after the Effective Date, of any new Run-of-River Plant on the Western Rivers.” The meaning of that provisions is not fully clear, but may have been intended to distinguish between “new” HEPs and those that were “in operation, or [were] under construction on the effective date”. Alternatively, its purpose could have been to make clear (if not already adequately so from the division of the Annexure into “Part I” (existing HEPs or those under construction) and “Part II”) (new Run-of-River plants)) that subsequent paragraphs, dealing both with design and operation, were limitations on the construction of HEPs *per se*. Whichever was the intention, the paragraph never made it into the final draft – it was removed by the June 1960 draft of Annexure D.

54. The design criteria set out in Paragraphs 8(a), (b), (c), (f) and (g) of Annexure D had their origins in the Heads of Agreement 1959,<sup>87</sup> while others appeared for the first time in the April 1960 draft of Annexure D.<sup>88</sup> No material changes (i.e., minor drafting changes only) were made to Paragraphs 8(a), (b), (c), and (e) as between the April 1960 draft of Annexure D and the final version. In relation to Paragraph 8(d) (outlets), the words “and economical” were introduced after “sound” (“sound and economical design”) in the final version of the Treaty.<sup>89</sup>

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<sup>85</sup> June 1960 draft of Annexure D, **Exhibit P-0478**, ¶ 2(e); Indus Waters Treaty 1960, **PLA-0001**, Annexure D, Paragraph 2(e).

<sup>86</sup> June 1960 draft of Annexure D, **Exhibit P-0478**, ¶ 2(g); Indus Waters Treaty 1960, **PLA-0001**, Annexure D, Paragraph 2(d).

<sup>87</sup> Heads of Agreement 1959, **Exhibit P-0136**, Annex B, ¶ 3 (see **Section 5C.3** below).

<sup>88</sup> April 1960 draft of Annexure D, **Exhibit P-0476**.

<sup>89</sup> See Redline of Annexure D of the Indus Waters Treaty as against June 1960 draft of Annexure D (created by Counsel for Pakistan for the purposes of this Memorial), **Exhibit P-0520**.

55. Draft paragraph 3(c) of the Heads of Agreement 1959, Annex B, which became Paragraph 8(f) of Annexure D (height of the intake for the turbines) referred to the concept of “satisfactory construction and operation” of the Plant. That expression might, therefore, have been the result of the parties’ negotiations on this Annex in London in August to September 1959. That expression was then amended after the June 1960 draft of Annexure D, in its final text, with the following additions shown in underline:

“(f) The intakes for the turbines shall be located at the highest level consistent with satisfactory and economical construction and operation of the Plant as a Run-of-River Plant and with customary and accepted practice of design for the designated range of the Plant’s operation.”<sup>90</sup>

56. This change does not appear in the list of amendments to the June 1960 draft of Annexure D proposed by either party.<sup>91</sup> The negotiating records shed no light on the reason for the change. Nor do the negotiating records illuminate the intended meaning behind the terms “satisfactory and economical construction and operation”, “customary and accepted practice of design”, or “sound design and satisfactory operation”, used in Paragraph 8 of Annexure D.

57. As explained in paragraphs 143-144 below, paragraphs 10 and 11 of Annex B of the Heads of Agreement 1959<sup>92</sup> bear close resemblance to what became Paragraph 15 of Annexure D of the final Treaty. Certain numerical amendments and minor drafting amendments were made to these provisions (at what became Paragraph 15 of Annexure D) in the April 1960 draft of Annexure D<sup>93</sup>: in particular, it reduced “the volume [to be] delivered into the river below the Plant” to “not less than 30%” and “not more than 130%”, from the 50% and 150%, respectively, envisaged in Annex B of the Heads of Agreement 1959. The drafting of this provision in the April 1960 draft of Annexure D was maintained materially unchanged into the final text.<sup>94</sup>

58. The Heads of Agreement 1959 also reflected the principle – subsequently operationalised at Paragraph 14 of Annexure D and Paragraph 18 of Annexure E – that filling

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<sup>90</sup> See Redline of Annexure D of the Indus Waters Treaty as against June 1960 draft of Annexure D (created by Counsel for Pakistan for the purposes of this Memorial), **Exhibit P-0520**.

<sup>91</sup> Indus Waters Treaty 1960, Annexure D (Draft dated 6<sup>th</sup> June, 1960), Amendments proposed by Pakistan, **Exhibit P-0380**; Indus Waters Treaty 1960, Annexure D (Draft dated 6<sup>th</sup> June, 1960), Amendments proposed by India, **Exhibit P-0379**; Annexures C-F, Second list of amendments proposed by India, 25 August 1960, **Exhibit P-0152**.

<sup>92</sup> Heads of Agreement 1959, **Exhibit P-0136**.

<sup>93</sup> April 1960 draft of Annexure D, **Exhibit P-0476**, ¶ 14.

<sup>94</sup> The final Treaty adopted 30% / 130% (Paragraph 15, Annexure D) (other than where a Plant is located at a site on the Chenab Main below Ramban).

of dead storage would be “carried out only when there is surplus water in the rivers” (Annex B, paragraph 8). The final version of the Treaty made provision for detailed rules regarding the filling of dead storage which would apply in the event that the Commissioners were unable to agree specific rules (Paragraph 18 of Annexure E).

### **3. The provision by India of information regarding new Run-of-River Plants**

59. Drafts of Annexure D, from the very beginning (both in April 1960, and before), included a provision enabling Pakistan to police India’s compliance with the strictures of the Annexure. Paragraph 4 of Annex B of the Heads of Agreement 1959, made provision for a requirement on India to communicate to Pakistan in writing, “at least six months in advance of the beginning of construction”, the information specified in Appendix I. The April 1960 Draft of Annexure D made similar provision at Paragraph 8 (as it was at the time).<sup>95</sup> By the time of the final version, the wording of this provision had changed from that of “enabl[ing] Pakistan to apply the criteria” of what would become Paragraph 8, to “enabl[ing] Pakistan to satisfy itself that the design of a Plant conforms to the criteria” mentioned in that Paragraph.

60. The information that India was required to provide, under Appendix I of Annex B of the Heads of Agreement, comprised much of the same information as was ultimately required by what became Appendix II to Annexure D of the final Treaty. The only noteworthy change in the provision setting out Pakistan’s obligation to communicate any objection it may have to the proposed design of a Run-of-River plant, as it was in paragraph 5 of Annex B, as against the final version of the Treaty, was to give Pakistan three months – as opposed to the two initially envisaged – in which to communicate any objection.<sup>96</sup>

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<sup>95</sup> April 1960 draft of Annexure D, **Exhibit P-0476**.

<sup>96</sup> Changes were also introduced to the information-sharing provision at Article VII(2) of the December 1959 draft, by the April 1959 draft; namely, to amplify the information-sharing obligation so as to require a Party to “supply the other Party with such data regarding the nature, magnitude and effect, if any, of the work as may be available”, upon request. See Redline of April 1960 draft as against December 1959 draft (created by Counsel for Pakistan for the purposes of this Memorial), **Exhibit P-0516**, Article VII(2).

**5. THE NEGOTIATING HISTORY OF THE TREATY, WITH PARTICULAR FOCUS ON ARTICLE III AND ANNEXURE D**

61. Negotiations based on the 1951 Lilienthal proposal having failed, the grand bargain reflected in the Treaty had its roots primarily in the 1954 Proposal),<sup>97</sup> as explained in **Chapter 7B.2** of Pakistan's Memorial, and as further described in **Section 5A** below. The period after the Bank's 1954 Proposal was punctuated by important developments in 1956 and 1957, but, as further described in **Section 5B** below, negotiations in that period failed to yield agreement on the parameters of a treaty. It was thus not until 1959 that a breakthrough was achieved and negotiations began in earnest on a form of agreement that most closely resembles the Treaty as it was finally agreed, as set out in **Section 5C** below.

**A. THE BANK'S 1954 PROPOSAL**

62. The Bank's solution to the failure of negotiations based on the 1951 Lilienthal proposal (as described in **Section 2** above) was to put forward a new proposal which divided the rivers, "giving each nation an independent and separate supply"<sup>98</sup> (the Bank's 1954 proposal).<sup>99</sup>

63. The 1954 Proposal embodied two fundamental principles: first, that "historic withdrawals of water must be continued, but not necessarily from existing sources";<sup>100</sup> and second, that of mutual independence, achieved by dividing control of the waters (Western Rivers to Pakistan, Eastern Rivers to India<sup>101</sup>).<sup>102</sup> The Bank reasoned that:

"[A]llocation of supplies to the two countries should be such as to afford the greatest possible freedom of action by each country in the operation, maintenance and future development of its irrigation facilities. It is desirable, so far as practicable, *to avoid control by India over waters on which Pakistan will be dependent*, and to enable each country to control the works supplying the water allocated to it and determine in its own interests the apportionment of waters within its own territories. This principle has not merely the negative advantage of minimizing friction between the two countries (a matter of some significance in view of the disputes that have arisen from sharing waters from the same river) and of avoiding the necessity of a costly and perhaps ineffective joint administration. It also has a positive advantage. There is every reason to believe that leaving each country free to develop its own water resources in the light of its own needs and resources, and without having to obtain the agreement of the other at each

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<sup>97</sup> 1954 Proposal, **Exhibit P-0130**. See further, Pakistan's Response, Appendix C, ¶ 6 and fn. 6, and the references set out therein.

<sup>98</sup> Michel, 1967, **Exhibit P-0234**, p. 235.

<sup>99</sup> 1954 Proposal, **Exhibit P-0130**.

<sup>100</sup> *Id.*, ¶ 21.

<sup>101</sup> *Id.*, ¶¶ 24, 24.a and 24.b.

<sup>102</sup> *Id.*, ¶ 22. See also, Competence Award, ¶ 59.

point, will in the long run most effectively promote the efficient development of the whole system.”<sup>103</sup>

64. The Bank's 1954 proposal therefore emphasised independence and exclusivity in guaranteeing the uninhibited, free and uninterrupted flow of the waters.

65. The foundational principle of the 1954 Proposal was that “the waters of the Western rivers would be reserved to Pakistan and the waters of the Eastern rivers would, subject to a relatively short transition period, be reserved to India.”<sup>104</sup> The details of that plan were further specified in four simple paragraphs, the first of which is the early progenitor of India's “let flow” obligation that would eventually be crystallised in Article III(1) of the Treaty:

“a. The *entire flow of the Western rivers (Indus, Jhelum and Chenab)* would be available for the exclusive use and benefit of Pakistan, and for development by Pakistan, except for the insignificant volume of Jhelum flow presently used in Kashmir.

b. The *entire flow of the Eastern rivers (Ravi, Beas and Sutlej)* would be available for the exclusive use and benefit of India, and for development by India, except that for a specified transition period India would continue to supply from these rivers, in accordance with an agreed schedule, the historic withdrawals from these rivers in Pakistan.

c. The transition period would be calculated on the basis of the time estimated to be required to complete the link canals needed in Pakistan to make transfers for the purpose of replacing supplies from India. [...]

d. Each country would construct the works located on its own territories which are planned for the development of the supplies. The costs of such works would be borne by the country to be benefited thereby. Although no works are planned for joint construction by the two countries, certain link canals in Pakistan will, as stated above, be needed to replace supplies from India. India would bear the costs of such works to the extent of the benefits to be received by her therefrom. [...].”<sup>105</sup>

66. The Bank clarified and observed, in relation to point (a) above – the entire flow of the Western Rivers be available for the exclusive use and benefit of Pakistan – that the “Chenab River rises in India and, before it enters Kashmir, provides a substantial flow that could be diverted for use in India.” Accordingly, it was, in the Bank's view, “*essential*” that India give “[a]ssurance [...] that the flow of this river will not be disturbed”.<sup>106</sup>

67. In relation to point (b) above, the Bank further specified that the entire flow of the Ravi,

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<sup>103</sup> 1954 Proposal, **Exhibit P-0130**, ¶ 22 (emphasis added).

<sup>104</sup> *Id.*, ¶ 24.

<sup>105</sup> *Id.* (emphasis added).

<sup>106</sup> *Id.*, ¶ 26 (emphasis added).

Beas and Sutlej Rivers (the Eastern Rivers) “would be allocated to India when the necessary works have been completed to permit transfers of supplies from the Western rivers to replace historic withdrawals in Pakistan from the Eastern rivers.”<sup>107</sup>

68. The Bank argued that its proposal “provide[d] a fair division of the waters”; “protect[ed] existing irrigation uses from disturbance and allocate[d] surplus supplies [...] in accordance with the principle of equitable apportionment.”<sup>108</sup> Another critical feature of the Bank’s proposal was the “mutual independence” it provided: the “location of works serving each country on territories under its control, *and the assurances against interference by either country with the supplies on which the other depends*, should reduce the chances of disputes and tension and contribute to improved relations.”<sup>109</sup> Commenting on a draft of the 1954 Proposal ahead of its release to the parties, Mr Lilienthal described the proposal as “an ingenious one”.<sup>110</sup>

69. India was swift to accept the Bank’s 1954 proposal. By a letter of 25 March 1954, the Indian representative accepted the Bank’s 1954 Proposal with the caveat that “[t]he actual agreement will naturally have to be carefully worked out in detail and should safeguard existing uses within the State of Jammu and Kashmir and future local developments therein which would involve relatively insignificant consumptive uses.”<sup>111</sup>

70. Pakistan was somewhat slower to accept the 1954 Proposal. There were two main reasons for its reluctance. **First**, Pakistan believed that the Bank’s proposal did not in fact guarantee supplies for Pakistan’s existing uses, as the proposal purported to do.<sup>112</sup> It said that “necessary adjustments” would need to be made in order to “give[] effect to the principles enunciated by the Bank”.<sup>113</sup> **Second**, Pakistan was gravely concerned about the proposal to “cut off the supplies which Pakistan has traditionally received from the Eastern rivers” as the way to operationalise the goal of avoiding “control of supplies by India over waters on which Pakistan will be dependent”.<sup>114</sup> As the Prime Minister of Pakistan explained to Mr Black at the time, “[t]he Government of Pakistan cannot visualize with equanimity the possibility of

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<sup>107</sup> *Id.*, ¶ 27.

<sup>108</sup> *Id.*, ¶ 37.

<sup>109</sup> *Id.*, ¶ 41 (emphasis added).

<sup>110</sup> General Wheeler, Memorandum to Files, 3 February 1954, **Exhibit P-0381**.

<sup>111</sup> Letter from Dr Khosla to Gen. R. A. Wheeler, 25 March 1954, **Exhibit P-0377**.

<sup>112</sup> Letter No. F. 24/54/60 from Prime Minister Mohammed Ali to Mr Black, 14 May 1954, **Exhibit P-0382**, ¶ 3.

<sup>113</sup> *Id.*

<sup>114</sup> *Id.*, ¶ 4.

implementing a plan [i.e., to “cut off Pakistan’s historic supplies from the Eastern rivers”] which would affect its vital interest adversely for all time to come”<sup>115</sup>

71. After some months of further discussions,<sup>116</sup> on 28 July 1954, Pakistan formally informed the Bank that, notwithstanding the “great sacrifices” involved for Pakistan,<sup>117</sup> it accepted the 1954 Proposal as the basis for an agreement. Pakistan’s acceptance was conditional on the assurances that (a) Pakistan’s existing uses supplied by the Eastern Rivers, and the planned requirements of Gudu and Sukkur, could be met from the flow of the Western Rivers, and (b) India would bear the cost of the necessary works to the extent of the benefit it derived from this arrangement.<sup>118</sup> If it became clear that “a workable plan” to achieve (a) could not be prepared, the Bank would “use its good offices to bring about acceptance of reasonable adjustments”.<sup>119</sup> Pakistan’s acceptance thus enabled the two governments, with the participation of the Bank, “to move forward towards a definite agreement”.<sup>120</sup>

**B. DEVELOPMENTS AFTER THE BANK’S 1954 PROPOSAL: THE BANK’S AIDE MEMOIRE OF 1956 AND THE MAY AND JUNE 1957 HEADS OF AGREEMENT**

72. The basic scheme of the 1954 Proposal, dividing the flow of the Indus Basin waters between India and Pakistan and giving complete control of each over its own supplies of water, survived essentially unaltered after years of negotiations. Instead, discussions over the years focused on how the Bank’s proposed scheme would be operationalised.

73. President Black wrote to the Prime Ministers of Pakistan and India on 13 August 1954, attaching as Annex A the Bank’s proposed terms of reference for continued work based on the 1954 Proposal (“**Terms of Reference**”).<sup>121</sup> Paragraph 2 of the Terms of Reference provided that the comprehensive plan would aim to meet, from the flow of the Western Rivers, among others things, all pre-Partition actual uses.<sup>122</sup> Paragraph 3 provided that if any surplus remained it should be allocated to “the reasonable additional requirements” of Sukkur and Gudu and “of future development in the State of Jammu and Kashmir.”<sup>123</sup> Paragraph 4 provided the

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<sup>115</sup> *Id.*.

<sup>116</sup> Alam, 1998, **Exhibit P-0245**, p. 127.

<sup>117</sup> Letter from Foreign Minister Zafrulla Khan to Mr Black, 28 July 1954, **Exhibit P-0383**, ¶ 3.

<sup>118</sup> *Id.*, ¶¶ 2–3.

<sup>119</sup> *Id.*, ¶ 3.

<sup>120</sup> Letter from Mr Garner to Prime Minister Nehru, 28 July 1954, **Exhibit P-0384**.

<sup>121</sup> Letter from Mr Black to Prime Minister Nehru (with enclosures), 13 August 1954, **Exhibit P-0385**.

<sup>122</sup> *Id.*, Annex A, ¶ 2.

<sup>123</sup> *Id.*, Annex A, ¶ 3.

acknowledgment of Pakistan's previously expressed concerns, stipulating that if "the flow supplies of the Western rivers are found to be inadequate [...] to meet the uses envisaged [in the Terms of Reference], the plan will outline the feasible means that might be adopted to meet any deficiencies."<sup>124</sup> The planning was to include consideration of, and recommendations for, "the engineering works required, the costs involved and the sharing thereof", and, whenever the Bank deemed it "necessary in the process of working out the plan, [it] will use its good offices to bring about acceptance of adjustments which the Bank shall consider reasonable in the light of all the circumstances."<sup>125</sup>

74. By letters of 19 and 24 August respectively, India and Pakistan cautiously accepted the Bank's Terms of Reference.<sup>126</sup> In doing so, Pakistan emphasised the need to adhere to the 1954 Proposal that "the entire flow of Western rivers (Indus, Jhelum and Chenab) would be available for the exclusive use and benefit of Pakistan, and for development by Pakistan, *except for the insignificant volume of Jhelum flow presently used in Kashmir*"<sup>127</sup>, as India had requested in its letter of 25 March 1954 (see paragraph 69 above). India's acceptance of the proposed Terms of Reference contained certain reservations, but none related to its uses of the Western Rivers.<sup>128</sup>

75. Pakistan remained concerned about the Bank proposal opening the door to India "establishing future claims on Jammu Kashmir waters".<sup>129</sup> For that reason, Pakistan made inquiries as to the Bank's understanding of the meaning of the words "relatively insignificant consumptive uses". The results of this inquiry were stated in a letter of 20 October 1954, from Malik Feroz Khan Noon (then Chief Minister of Punjab) to the Minister of Interior of Pakistan.<sup>130</sup> Mr Garner, Vice President of the Bank, explained that they were not intended "to convey anything more than really insignificant uses, such as minor extensions or irrigation from existing channels [...]. [...] these words certainly did not cover the construction of new channels or major extensions of existing channels. Nor did they cover the construction of new major works, such as storages, dams, tunnels, etc."<sup>131</sup>

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<sup>124</sup> *Id.*, Annex A, ¶ 4.

<sup>125</sup> *Id.*, Annex A, ¶¶ 5 and 7.

<sup>126</sup> Letter from Prime Minister Nehru to Mr Black, 19 August 1954, **Exhibit P-0386**; Letter from Foreign Minister of Pakistan to Mr Black, 24 August 1954, **Exhibit P-0387**.

<sup>127</sup> Letter from Foreign Minister of Pakistan to Mr Black, 24 August 1954, **Exhibit P-0387**, ¶ 2 (emphasis added).

<sup>128</sup> Letter from Prime Minister Nehru to Mr Black, 19 August 1954, **Exhibit P-0386**.

<sup>129</sup> See Alam, 1998, **Exhibit P-0245**, p. 129.

<sup>130</sup> Letter from Malik Feroz Khan Noon to the Minister of Interior of Pakistan, 20 October 1954, **Exhibit P-0388**.

<sup>131</sup> *Id.*



76. Substantive negotiations recommenced in November 1954, with the objective of preparing a “comprehensive plan” based on the Bank’s 1954 Proposal, “taking as a starting point the division of waters envisaged therein.”<sup>132</sup> From this point on, Mr Gulhati replaced Dr Khosla as the Head of the Indian delegation, and Mr Mueenuddin became Head of Pakistan’s delegation.<sup>133</sup> As Michel recalls in his detailed exposition of the negotiations, Pakistan continued to maintain, throughout 1955, that “the Western Rivers, *without storage facilities*, would be unable to meet even replacement uses”.<sup>134</sup> Pakistan successfully persuaded the Bank to seek the advice of the New York engineering firm, Tippetts-Abbett-McCarthy-Stratton (“TAMS”), who confirmed that Pakistan was correct.<sup>135</sup>

77. After 18 months of discussions, including with other governments to explore the possibility of their financial contributions to the works that would be required to effect the division of the waters,<sup>136</sup> the Bank presented to the negotiating parties its 1956 Aide Memoire.<sup>137</sup> The 1956 Aide Memoire recorded that, while it had not been possible to reach agreement on certain issues:

“the ‘division of the waters’ contemplated by the Bank Proposal of February 1954 affords the best prospects for a settlement of the Indus Waters question; that out of the flow-cum-storage potential of the rivers allocated to them, India and Pakistan could each develop very substantial irrigation uses, additional to those that they now enjoy; and that no insuperable engineering difficulties are likely to arise in either country in constructing the physical works necessary to develop these additional supplies.”<sup>138</sup>

78. The 1956 Aide Memoire recorded that the Bank’s consultants (TAMS) had studied “the extent to which the flow of the Western Rivers will meet the uses envisaged”, as set out in the Bank’s Terms of Reference,<sup>139</sup> and that they had concluded, among other things, that the 1954 Proposal would lead to “consistent shortages [of water] in Rabi, occasionally beginning in late September or extending into early April [...], of a degree, duration and frequency which the Bank Group could not regard as ‘tolerable’.”<sup>140</sup> For these reasons, the Bank recommended “an

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<sup>132</sup> 1956 Aide Memoire, **Exhibit P-0131**, ¶ 1; referring to the “Terms of Reference and Procedure” proposed by the Bank set out in Annex A to the Letter from Mr Black to Prime Minister Nehru (with enclosures), 13 August 1954, **Exhibit P-0385**.

<sup>133</sup> Alam, 1998, **Exhibit P-0245**, pp. 130–131.

<sup>134</sup> Michel, 1967, **Exhibit P-0234**, p. 244 (emphasis original).

<sup>135</sup> *Id.*

<sup>136</sup> World Bank, Record of a Meeting at the World Bank, Washington, D.C., 13 March 1956, **Exhibit P-0389**.

<sup>137</sup> 1956 Aide Memoire, **Exhibit P-0131**; Memorandum from Mr Iliff to Files, 21 May 1956, **Exhibit P-0390**.

<sup>138</sup> 1956 Aide Memoire, **Exhibit P-0131**, ¶ 4 (emphasis original).

<sup>139</sup> *Id.*, ¶ 6 (referring to the “Terms of Reference and Procedure” proposed by the Bank set out in Annex A to the Letter from Mr Black to Prime Minister Nehru (with enclosures), 13 August 1954, **Exhibit P-0385**).

<sup>140</sup> 1956 Aide Memoire, **Exhibit P-0131**, ¶ 6(c)(iii).

adjustment” to the transitional arrangements in its Proposal, to “assure to Pakistan ‘timely’ water sufficient to eliminate the shortage” identified.<sup>141</sup> It is evident from the 1956 Aide Memoire that the imperative to ensure the timely delivery of water to Pakistan was ever-present, and pervaded negotiations on all aspects of the bargain.

79. In relation to India's uses of the Western Rivers, the 1956 Aide Memoire also recorded India's claim “that some part of the flow of the Jhelum and Chenab should be reserved for future development”, involving “relatively insignificant consumptive uses”, in the State of Jammu and Kashmir.<sup>142</sup> The Bank decided that this question should be “postponed until the point has been reached when the provisions of an international water treaty might be under consideration.”<sup>143</sup> The provision in the 1956 Aide Memoire that the question of future development in the State of Jammu and Kashmir could be postponed until the drafting of a treaty reflects the understanding that the proposed new uses would be so small as not measurably to affect the flow in Pakistan, and therefore not to affect a plan worked out on the basis of waters historically available to Pakistan in the Western Rivers.

80. Both sides agreed thereafter to continue negotiations (initially until 31 March 1957<sup>144</sup>) with a view to “working out, with the assistance of the Bank, a settlement of the question satisfactory to both Governments on the basis of the Bank Proposal of 5<sup>th</sup> February 1954, and of [the] Aide Memoire of 21<sup>st</sup> May 1956.”<sup>145</sup> The negotiations, which recommenced in September 1956, centred primarily on the continuation of ad hoc arrangements for Indian withdrawals from the Eastern Rivers, and the transitional arrangements: the timing of the transition period, and the nature and cost of the necessary works.<sup>146</sup> At this early stage, there

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<sup>141</sup> *Id.*, ¶ 8(a). See also World Bank, Proceedings at Meeting of Executive Directors on June 6, 1956, “Indus Waters Question”, **Exhibit P-0391**, p. 4: “we have reached the conclusion that the original proposal made by the Bank in February of 1954, which envisaged that certain uses could be met by the construction of link canals only – in other words, that those certain uses could be met out of flow – requires some modification, and that the flow waters would require some fortification in the form of storage on the western rivers. [...] In the light of that, we have felt it necessary to propose to both governments an adjustment of the Bank proposal, [...] to take the form of the provision of the appropriate amount of storage on the western rivers.”

<sup>142</sup> 1956 Aide Memoire, **Exhibit P-0131**, ¶ 7(b).

<sup>143</sup> *Id.*

<sup>144</sup> *Id.*, ¶ 10(b).

<sup>145</sup> Letters from Mr Iliff to Mr Gulhati and Mr Mueenuddin, 30 July 1956, **Exhibit P-0392**; Response from Mr Mueenuddin to Mr Iliff, 10 September 1956, **Exhibit P-0393** and Response from Mr Gulhati to Mr Iliff, 15 September 1956, **Exhibit P-0394**.

<sup>146</sup> On 19 September 1956, India and Pakistan met at the Bank. The minutes of the meeting record Mr Iliff's suggestion that the two delegations should “prepare an outline of Plan to conform to the principles stated in the Aide Memoire. The Plan should be workable and exploit the flow waters of the Western Rivers to the maximum possible extent. The minimum inroads should be made on Pakistan's storage capacity.” The Minutes also referred to a list of “examples” of “Administrative Problems” that may arise in the implementation of the Treaty – they

was no discussion of the specific provisions of the ultimate treaty; nor was an annexure regarding the generation of hydro-electric power by India on the Western Rivers so much as envisaged.<sup>147</sup> Instead, the records of meetings held at the World Bank over this period suggest that the negotiating parties also discussed: (1) their understandings of what the division of the rivers would mean in practice; and (2) the current and future irrigation requirements of Pakistan.

81. On the **first** issue, in a series of meetings held between 10 and 16 October 1956, it is recorded that Dr Berber, a representative of India, suggested that:

“1. India should not alter the flow either in quantity or timeliness of the Western Rivers as they pass into Pakistan.

2. India may only construct obstructions on the Western Rivers in India with Pakistan's consent.”<sup>148</sup>

82. The *quid pro quo* was the allocation of the Eastern Rivers to India. On that, Dr Berber observed that: “4. [...] India may take all the Eastern Rivers' water but does not have to take it all. The question of floods, therefore arises here.”<sup>149</sup>

83. The **second** issue (the current and future irrigation requirements of Pakistan) was discussed on at least one occasion. The Minutes of a Meeting of the Bank, which took place on 11 October 1956, noted that “[t]he Pakistanis will be able to maintain the existing standard of living with the 1.5% increase of population per annum”, but that they would “not be able to increase the standard of living by 6% as contemplated in the Plan on the basis of a 1.5% increase in population per annum.”<sup>150</sup> Pakistan also commissioned its own report on irrigation requirements from the American engineering firm Tipton and Kalmbach, Inc.. It instructed the firm *inter alia* to “determine those works required to replace Eastern River water now used by Pakistan if the principles of the [Bank's 1954 Proposal], supplemented by [the 1956 Aide Memoire], are accepted.”<sup>151</sup> The firm concluded that “the water requirements as shown in this

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included, presciently, “Waters used by both countries i.e. Kashmir, Western River power in India, etc.” (World Bank, Minutes of the Meeting, 19 September 1956, **Exhibit P-0395**, ¶¶ 2A and 5). India presented its plan to the Bank on 16 October 1956 (Alam, 1998, **Exhibit P-0245**, p. 136), and Pakistan presented its “Aide Memoire Plan” on 22 October 1956 (World Bank, Minutes of the Meeting (Pakistan Delegation), 22 October 1956, **Exhibit P-0396**).

<sup>147</sup> See World Bank, Minutes of the Meeting (Indian representatives), **Exhibit P-0397**, ¶ 4.

<sup>148</sup> World Bank, Minutes of Meetings (Indian Delegation), 10, 12 and 16 October 1956, **Exhibit P-0398**, ¶ A.

<sup>149</sup> *Id.* (emphasis original).

<sup>150</sup> World Bank, Minutes of the Meeting (Bank only), 11 October 1956, **Exhibit P-0399**, ¶ 7 (emphasis original).

<sup>151</sup> Tipton and Kalmbach, Inc., “Report on Irrigation Water Requirements for West Pakistan”, 30 April 1957, **Exhibit P-0400**, p. 3 of the exhibit (Letter from Tipton and Kalmbach, Inc. to Mr Mueenuddin, 30 April 1957).

report will adequately meet the needs for the lands of the Basin.”<sup>152</sup>

84. The negotiating parties subsequently agreed to extend the period for their “cooperative work”, from 31 March 1957 to 30 September 1957.<sup>153</sup> Shortly after the announcement of the parties’ agreement to extend their negotiations, on 13 May 1957 the Bank conveyed to India and Pakistan “some suggestions for ‘Heads of Agreement’ for a possible approach to an international water agreement based on the principles of the Bank [1954] Proposal and of the Aide Memoire”.<sup>154</sup> The purpose of the May 1957 Heads of Agreement was not to be a “draft of an international agreement”, but a “basis for discussion”.<sup>155</sup>

85. The May 1957 Heads of Agreement<sup>156</sup> continued to build upon the division of the waters and the concomitant exclusivity that had been advanced in the 1954 Proposal, as amended by the 1956 Aide Memoire, but amplified the content of that principle in a number of ways. The May 1957 Heads of Agreement provided, in relevant part, that:

“1. Subject to the provisions of the succeeding paragraphs of this Annex, *the entire flow of the three Western Rivers of the Indus System (Indus, Jhelum and Chenab) shall be available for the exclusive use and benefit of Pakistan and for development by Pakistan*, and the entire flow of the three Eastern Rivers of the Indus system (Ravi, Beas and Sutlej) shall, as from the expiration of the final transitional period hereinafter in this Annex referred to, be available for the exclusive use and benefit of India and for development by India.

<sup>152</sup> *Id.*, p. 4 of the exhibit (Letter from Mr Blaney and Mr Criddle, 20 April 1957).

<sup>153</sup> Letter from Mr Black to Prime Minister Suhrawardy, 11 April 1957, **Exhibit P-0401**; Letter from Mr Black to Prime Minister Nehru, 11 April 1957, **Exhibit P-0415**; Letter from Prime Minister Suhrawardy to Mr Black, 20 April 1957, **Exhibit P-0403**; Letter from Prime Minister Nehru to Mr Black, 24 April 1957, **Exhibit P-0404**. See also World Bank Press Release, 6 May 1957, **Exhibit P-0405**. The response of India’s Prime Minister Nehru on 24 April 1957 to the proposal for an extension conveyed, however, his “serious[] concern[] at the absence of any progress during [the prior] period” and his view that “in the absence of any indication by the Government of Pakistan of their intention to accept the Bank Proposal of February 1954, it is difficult for us to make any useful appraisal of the situation.” (Letter from Prime Minister Nehru to Mr Black, 24 April 1957, **Exhibit P-0404**). Pakistan responded to the Indian Prime Minister’s letter on 20 May 1957. Mr Mueenuddin’s response emphasised that: “[I]n the interest of a peaceful settlement, *the Government of Pakistan accepted the Bank proposal in principle as the basis for agreement on the assumption that a workable plan can be prepared on that basis which will provide, from the flow of the Western Rivers, all the uses and requirements set out in paragraph 3 of the Pakistan Foreign Minister’s letter, dated July 26, 1954 to Mr. Black*. After 18 months of studies, arranged independently by the Bank, it was admitted in the Bank’s Aide Memoire dated May 21, 1956, that after taking into account the possibility of the transfer of the flow supplies of the Western River by a system of link canals there will be, even on the basis of reduced uses, serious shortages which the Bank itself considered intolerable.” (Letter from Mr Mueenuddin to Mr Iliff, 20 May 1957, **Exhibit P-0406**, ¶ 2 (emphasis added)).

<sup>154</sup> Letter from Mr Iliff to Mr Mueenuddin (with enclosure), 13 May 1957, **Exhibit P-0362**, ¶ 3; Letter from Mr Iliff to Mr Gulhati (enclosure omitted), 13 May 1957, **Exhibit P-0407**, ¶ 3. The enclosure to the letters (included only within Exhibit P-0362) (entitled “Annex”) set out some suggestions for a “Heads of Agreement” (i.e., the May 1957 Heads of Agreement). See also, **Chapter 7B.3** of Pakistan’s Memorial.

<sup>155</sup> Letter from Mr Iliff to Mr Mueenuddin (with enclosure), 13 May 1957, **Exhibit P-0362**, ¶ 4; Letter from Mr Iliff to Mr Gulhati (enclosure omitted), 13 May 1957, **Exhibit P-0407**, ¶ 4.

<sup>156</sup> Letter from Mr Iliff to Mr Mueenuddin, 13 May 1957 (with enclosure), **Exhibit P-0362**, Annex.

2. (a) To the extent that historic irrigation uses in the State of Jammu and Kashmir have, up to now, been met from the flow of the Indus or of the Jhelum or of the Chenab or of the Ravi, they shall continue to be so met.

(b) *Projects for the development of additional uses in the State of Jammu and Kashmir from the flow of the Indus, Jhelum or Chenab shall be subject to review and to determination in the manner provided by Paragraph 10(g) of this Annex.*<sup>157</sup>

86. The May 1957 Heads of Agreement envisaged that the “full implementation” of this division of waters would take place by a series of successive steps – construction of systems of link canals and a system of works – in three phases.<sup>158</sup> The final transitional period referred to in Paragraph 1 was to expire on the date of the completion of the entire system of works.<sup>159</sup>

87. The May 1957 Heads of Agreement also provided for the establishment of an Indus Waters Commission,<sup>160</sup> who would oversee the works required for the transitional period, but, importantly, also certain proposals concerning India's use of the Western Rivers:

“10. The functions of the Commission shall be the following:

[...]

(g) A review of, and a determination on, all proposals for future local development in the State of Jammu and Kashmir from the flow waters of the Indus or the Jhelum or the Chenab. In carrying out any such review and in making any such determination, the Commission shall be *guided by the principle that such development shall comprise relatively insignificant consumptive uses.*

(h) A review of, and a determination on, *all proposals for the construction of works on the Indus or on the Jhelum or on the Chenab, outside the boundaries of Pakistan, which are likely to interfere with the timing of the natural flow into Pakistan of the waters of any of these rivers.*”<sup>161</sup>

88. These functions reflected the fundamental principle that India's use of the Western Rivers should be strictly limited, so as to ensure minimal “interfer[ence] with the timing of the natural flow into Pakistan of the waters of [...] these rivers”. In order for the Commission to carry out its proposed functions, the May 1957 Heads of Agreement also provided that both countries were required to “afford the Commission all facilities for discharging the functions assigned to” it, including the provision of relevant information:

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<sup>157</sup> May 1957 Heads of Agreement, ¶¶ 1-2 (emphasis added).

<sup>158</sup> *Id.*, ¶¶ 4-5.

<sup>159</sup> *Id.*, ¶ 6.

<sup>160</sup> *Id.*, ¶ 3.

<sup>161</sup> *Id.*, ¶ 10 (emphasis added).

“12. The Government of India and the Government of Pakistan shall each afford to the Commission all facilities for discharging the functions assigned to the Commission by this Annex, including the provision of such statistical information as the Commission may from time to time require, and shall grant liberty of access by the Commission to all irrigation works on the Indus system of rivers located in the territories of either of the two governments.”<sup>162</sup>

89. The detailed provisions of the May 1957 Heads of Agreement appear to have prompted the first frank discussions between the negotiating parties regarding India's intention to construct run-of-river HEPs on the Western Rivers. Over the years during which negotiations between India and Pakistan on a water treaty had been taking place, beginning at least as early as the late 1940s, India had been making no secret of its extensive hydroelectric power plans. In 1948, India's Central Board of Irrigation (“CBI”) published a “leaflet” (“Leaflet No. 5”) on “Hydro-Electric development in India”. In his Foreword to the first edition, the Secretary of the CBI – none other than Mr Gulhati, who in 1954 became India's Head of Delegation in the negotiations – explained that:

“India is fortunate in her vast resources of large rivers and high mountains and has a large hydro-electric power potential. The slow growth of hydro-electric power undertakings in India is compared with the rapid strides made by other countries of the world and a short account of the projects now under construction or investigation for the production of hydro-electric energy in India has been added.”<sup>163</sup>

90. A second edition of *Hydro-Electric development in India* was republished in September 1950, alongside a foreword, by then-Secretary S. L. Malhotra, explaining that since the publication of the first edition in 1948, “many more projects have been envisaged”.<sup>164</sup> The foreword emphasised “the genuine and natural anxiety of the Government of India and the State Government to develop” the “vast potential resources of water-power existing in our country”.<sup>165</sup>

91. Returning to the detailed provisions of the May 1957 Heads of Agreement, Pakistan raised concerns about the formulation of paragraph 10(h) of the May 1957 Heads of Agreement (set out in paragraph 87 above). Pakistan's comment bears reproducing in full:

“As to Paragraph 10(h) [...], it is assumed that it is not meant to give to the Commission authority to change the fundamental division of the rivers, or increase Indian control over the Western Rivers including their upstream tributaries. It will be recalled that the

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<sup>162</sup> *Id.*, ¶ 12 (emphasis added).

<sup>163</sup> Central Board of Irrigation, *Hydro-Electric development in India* (Leaflet No. 5, Second Edition), September 1950, **Exhibit P-0409**, p. ii.

<sup>164</sup> *Id.*, p. i.

<sup>165</sup> *Id.*.

Bank Proposal stated ‘It is desirable, so far as practicable, to avoid control by India over waters on which Pakistan will be dependent, and to enable each country to control the works supplying the water allocated to it...’. This being so, *any development on those rivers upstream of Pakistan would have to have the consent of the Government of Pakistan. It is not sufficient to have the Commission ascertain that the proposed works are not likely to interfere with the timing or amount of the natural flow into Pakistan.*”<sup>166</sup>

92. An internal Bank Memorandum recording a discussion held between Mr Iliff, the Vice President of the Bank at the time, and representatives of the Indian Delegation (Mr Gulhati and Dr Berber) on 27 May 1957, recorded that India’s response was to indicate its desire to be free to construct HEPs. The Memorandum records that:

“(b) [...] Pakistan had made the point [...] that *the construction of works in the Indus, Jhelum or Chenab should not be left to the Commission but the formula should be that such works should be constructed by India only after agreement with Pakistan. Gulhati said that while the Government of India would certainly be prepared to undertake not to construct live storage on any of those rivers or to interfere with the timing of the natural flow, India would wish to be free to construct run-of-the-river plants. I [Iliff] also mentioned that Pakistan would wish the qualification to be extended to the tributaries of the three Western rivers as well as to the main streams.*”<sup>167</sup>

93. A report (held in the World Bank archives and apparently prepared by Mr Iliff himself) of discussions held between Mr Iliff and representatives of the Government of Pakistan between 11 and 14 June 1957, records that Pakistan would likely “remain firm” and would “not give in” on a number of points, including that:

“(1) Pakistan is not prepared to acquiesce in any interference by India on the River Chenab. [...] Pakistan Representatives said that Pakistan would not agree to any storage on the River Chenab in Indian territory for purposes of replacement. (*Some anxiety was also expressed regarding hydro-electric development by India even if it did not involve storage*).”<sup>168</sup>

94. The report further specifies that, on this (and other) points, “there appears to be no room for negotiations and Pakistan would stick to them to the bitter end.”<sup>169</sup> The report records Pakistan’s expression of views on certain other topics, which the report describes as potentially allowing for “some room for negotiations”. Among these was Pakistan’s position that

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<sup>166</sup> Preliminary notes and queries regarding the Annex to Mr Iliff’s letter of May 13, 1957 (Pak Comments), **Exhibit P-0410**, pp. 2–3 (emphasis added).

<sup>167</sup> Mr Iliff, “Memorandum of Discussion on May 27 with Mr Gulhati and Dr Berber”, 27 May 1957, **Exhibit P-0411**, p. 1 (emphasis added).

<sup>168</sup> Summary Report of Mr Iliff’s Talk with the Representatives of the Government of Pakistan – Lahore, June 11–14, 1957, **Exhibit P-0412**, ¶ 4(1).

<sup>169</sup> *Id.*, ¶ 5.

“[a]dditional uses in the state of Jammu & Kashmir would have to be fixed quantitatively”.<sup>170</sup>

95. The meetings held between Bank representatives and the Government of Pakistan between 11 and 14 June 1957 are also recorded in a Memorandum of Pakistan dated 14 June 1957.<sup>171</sup> Pakistan's Memorandum records its confirmation that it was prepared to accept the principles of the Bank's 1954 Proposal and the 1956 Aide Memoire as the basis for a permanent settlement.<sup>172</sup> The Memorandum also records Pakistan's position, conveyed to the Bank representatives, “that it could not agree to the control by India of the Western Rivers even through works for generation of Hydro-electricity.”<sup>173</sup> As Alam observes in his exposition of the negotiations, Pakistan remained “[w]ary of its opponent, [and] wanted clear agreement upon matters before it agreed to part with the eastern rivers.”<sup>174</sup>

96. On 24 June 1957, Mr Iliff wrote to Mr Mueenuddin (Pakistan's Minister of Industries and Representative in the negotiations) and Mr Gulhati to confirm that his discussions with representatives of the Governments of India and Pakistan between May and June 1957 had led him to conclude that the “the best prospects of carrying forward the tripartite discussions to a successful conclusion” lay in attempting to obtain from the countries “acceptance of certain general Heads of Agreement, based on the Bank Proposal of February 5, 1954, and of the Aide-Memoire dated May 21, 1956” before formulating the detailed text of a treaty.<sup>175</sup> His letters enclosed an Appendix which set out a revised set of “General Heads of Agreement suggested for Acceptance as Basis for Approach to an International Water Treaty” (“**June 1957 Heads of Agreement**”).<sup>176</sup> The June 1957 Heads of Agreement contained just eight simple paragraphs (compared to the detailed 12 set out in the May 1957 Heads of Agreement<sup>177</sup>).

97. The June 1957 Heads of Agreement proposed, in relevant part, as follows:

“1. The entire flow of the Western Rivers (Indus, Jhelum and Chenab) would be available for the exclusive use and benefit of Pakistan, except for the extent to which

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<sup>170</sup> *Id.*, ¶ 5(vii).

<sup>171</sup> Pakistan's Memorandum, 14 June 1957, **Exhibit P-0363**.

<sup>172</sup> *Id.*, ¶ 2.

<sup>173</sup> *Id.*, ¶ 6.

<sup>174</sup> Alam, 1998, **Exhibit P-0245**, p. 138.

<sup>175</sup> Letter from Mr Iliff to Mr Mueenuddin, 24 June 1957, **Exhibit P-0413**, ¶ 2, and Letter from Mr Iliff to Mr Gulhati, 24 June 1957, **Exhibit P-0414**, ¶ 2.

<sup>176</sup> Letter from Mr Iliff to Mr Mueenuddin, 24 June 1957, **Exhibit P-0413**, and Letter from Mr Iliff to Mr Gulhati, 24 June 1957, **Exhibit P-0414**.

<sup>177</sup> May 1957 Heads of Agreement, **Exhibit P-0362**.



historic irrigation uses in the State of Jammu and Kashmir have been met from the flow of these rivers.

2. The entire flow of the Eastern Rivers (Ravi, Beas and Sutlej) would be available for the exclusive use and benefit of India and for development by India [...].<sup>178</sup>

98. On 13 July 1957, Mr Mueenuddin wrote to Mr Iliff to respond formally to Mr Black's letter to the negotiating States of 11 April 1957<sup>179</sup>, which had proposed extending the period of cooperative work until 30 September 1957. Mr Mueenuddin's letter confirmed in writing what Pakistan's representatives had already conveyed orally in the discussions held between 11 and 14 June 1957; namely, that Pakistan was prepared to accept the principles of the Bank's 1954 Proposal and the Aide Memoire as the basis "to go towards a treaty".<sup>180</sup> The Minister's letter identified the eleven "principles" of the Bank's 1954 Proposal and the 1956 Aide Memoire, as understood by the Government of Pakistan. The first two of these effectively reflected Pakistan's understanding of what would become the "let flow" principle (with most of the remainder concerning the transition period and associated works):

"A. India and Pakistan would enter into a treaty under which, subject to the performance of the other provisions of the treaty implementing the principles of the Adjusted Bank Proposal, Pakistan would agree that the entire flow of the Eastern Rivers (Sutlej, Beas and Ravi and their tributaries above the border between Pakistan and India) will eventually be available to India for its exclusive use and benefit and for development by India; and India would agree that *the entire natural flow of the remainder of the Indus system of rivers historically reaching Pakistan will be available for the exclusive use and benefit of Pakistan and for development by Pakistan.*

B. The historic (pre-Partition) uses in Jammu and Kashmir on the Western Rivers (Indus, Jhelum and Chenab and their tributaries other than the Eastern Rivers) will continue to be enjoyed by Jammu and Kashmir together with such additional uses in Jammu and Kashmir (stated to be quantitatively insignificant) as may hereafter be specifically agreed upon. *Works may not be constructed outside the boundary of Pakistan which might interfere or make it possible to interfere with the natural flow into Pakistan of the Western Rivers.*

[...]

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<sup>178</sup> June 1957 Heads of Agreement (Appendix to Letter from Mr Iliff to Mr Mueenuddin, 24 June 1957, **Exhibit P-0413**, and Appendix to Letter from Mr Iliff to Mr Gulhati, 24 June 1957, **Exhibit P-0414**), at ¶¶ 1–2.

<sup>179</sup> See Letter from Mr Black to Prime Minister Nehru, 11 April 1957, **Exhibit P-0415**.

<sup>180</sup> Letter from Mr Mueenuddin to Mr Iliff, 13 July 1957, **Exhibit P-0416**, ¶ 3.

E. The uses set out in paragraph 6(b) of the Aide Memoire<sup>[181]</sup> are to be met in the worst year. This principle will, however, be applied with reasonableness.”<sup>182</sup>

99. The parties responded to the Bank's latest proposal of 24 June 1957 by letters of 25 July 1957.<sup>183</sup> These letters reflect the ongoing schism between the parties on the issue of construction of HEPs on the Western Rivers. For its part, Pakistan confirmed again that the “basic principles” of the Bank's 1954 Proposal and 1956 Aide Memoire, as it understood them and as described in its 13 July letter, were an acceptable “basis for formulating the text of an international waters treaty subject to the proviso that India also accepts this objective on the same basis.”<sup>184</sup> Pakistan enclosed with its letter a “draft for formulating a formal Heads of Agreement text”.<sup>185</sup> Consistent the negotiating position Pakistan had conveyed to the Bank orally and in writing the previous month, paragraph 2 of the draft text provided that:

“2. the entire natural flow of the [...Western Rivers] will be available for the exclusive use and benefit of Pakistan and for development by Pakistan, except that historic (pre-Partition) irrigation uses in Jammu and Kashmir which have been met from the flow of the Chenab and Jhelum, will continue to be enjoyed by Jammu and Kashmir together with such quantitatively insignificant additional uses in Jammu and Kashmir as may hereafter be specifically agreed upon. *No works will be constructed outside the boundary of Pakistan which might interfere or make it possible to interfere with the natural flow of the Western Rivers.*”<sup>186</sup>

100. Pakistan confirmed this position (namely, its understanding of point 1 of the June 1957 Heads of Agreement), by letter of 16 August 1957.<sup>187</sup>

101. India's response of 25 July 1957 conveyed its acceptance of the Bank's June 1957 Heads of Agreement as “the basis for an approach to an international water treaty”, “subject to the understanding mentioned in the appendix to this letter”.<sup>188</sup> Such “understanding” included that:

“As stated in our letter of 25 March, 1954, it would be necessary also to safeguard future local developments from the Western rivers in the State of Jammu and Kashmir before

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<sup>181</sup> *I.e.*, the following quantum of uses: “(i) Historic withdrawals of all canals (except the Pakistan Sutlej Valley Canals); (ii) Allocations for the Pakistan Sutlej Valley Canals (11.1 MAF); (iii) 3.6 MAF for Thal; (iv) 9.5 MAF for Kotri.” (1956 Aide Memoire, **Exhibit P-0131**).

<sup>182</sup> Letter from Mr Mueenuddin to Mr Iliff, 13 July 1957, **Exhibit P-0416**, ¶¶ 4.A-B and 4.E (emphasis added).

<sup>183</sup> Letter from Mr Mueenuddin to Mr Iliff (with enclosure), 25 July 1957, **Exhibit P-0417**; Letter from Mr Gulhati to Mr Iliff, 25 July 1957 (with enclosure), **Exhibit P-0364**.

<sup>184</sup> Letter from Mr Mueenuddin to Mr Iliff (with enclosure), 25 July 1957, **Exhibit P-0417**, ¶ 2.

<sup>185</sup> *Id.*, ¶ 3.

<sup>186</sup> *Id.*, Appendix, ¶ 2 (emphasis added).

<sup>187</sup> Letter from Mr Mueenuddin to Mr Iliff (with enclosure), 16 August 1957, **Exhibit P-0419**, enclosure, ¶ 1(c).

<sup>188</sup> Letter from Mr Gulhati to Mr Iliff (with enclosure), 25 July 1957, **Exhibit P-0364**, ¶ 5.

these rivers enter Pakistan territory. These future uses would involve relatively insignificant consumptive uses.

*Nothing stated herein would restrict in any way the development in India of hydro-electric power from the Western rivers and their tributaries; such development does not involve consumptive use of water.*<sup>189</sup>

102. Pakistan expressed its views on India's response in a letter from Mr Mueenuddin to Mr Iliff on 10 September 1957, in which Mr Mueenuddin underscored Pakistan's fundamental concerns regarding the possibility of Indian control of the flow of the waters allocated to Pakistan.<sup>190</sup> He observed that:

“The essence of the Bank Proposal and the basic justification for the division of rivers was to make the two countries independent of each other in the operation of their supplies. *Being the lower riparian, Pakistan alone is vulnerable to interference by India. By introducing for the first time at this stage new uses on Western Rivers, e.g. [...] unrestricted right to develop hydro-electric power from those rivers, India has, while trying effectively to secure to herself the exclusive use and development of the Eastern Rivers, sought to deny the reciprocal independence to Pakistan which the Bank Proposal and the Aide Memoire promised to afford to each country.* Pakistan cannot obviously accept a position which, despite the sacrifice on her part, in relinquishing permanently her rights on the Eastern Rivers, would take away from her the only consolation she could look forward to in agreeing to the division of rivers. In Pakistan's view the acceptance of India of the Bank Proposal and the Aide Memoire, in letter and spirit, to form a firm basis for an International Water Treaty should mean an unequivocal surrender of India's claim, if any, on the Western Rivers.”<sup>191</sup>

103. The Appendix to Mr Mueenuddin's letter addressed in more detail India's assertion that it would not be restricted from developing HEPs on the Western Rivers. It explained that:

“Hydroelectric works will interfere, or make it possible to interfere, with the flow of the rivers. Such interference is repugnant to the provisions of the Adjusted Bank Proposal and Pakistan cannot agree to any such works in areas under the control of India.

In fact, to achieve the objective of the Bank Proposal, namely, of affording mutual independence to the two countries it will be necessary to provide that no works are constructed in areas under the control of India which will restrict, diminish, or make it possible to interfere in any manner with the flow of the Western Rivers.”<sup>192</sup>

104. Pakistan's vehement opposition to so much as the possibility of Indian interference with the flow of the Western Rivers was clear.

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<sup>189</sup> *Id.*, Appendix, General Head 1, ¶¶ (2) and (3) (emphasis added).

<sup>190</sup> Letter from Mr Mueenuddin to Mr Iliff (with enclosure), 10 September 1957, **Exhibit P-0420**.

<sup>191</sup> *Id.*, ¶ 3 (emphasis added).

<sup>192</sup> *Id.*, Appendix, General Head 1, ¶ (3).

105. Not long after this correspondence addressing the Bank's June 1957 Heads of Agreement, tensions began to rise between Pakistan and India over what Pakistan perceived to be Indian threats to cut off water to Pakistan – whatever the status of the negotiations and the works to implement the division of waters – by 1962.<sup>193</sup> Around the same time, an unexplained and chronic water shortage in Pakistan, which Pakistan believed to have been caused by India cutting off supplies, brought back memories of the April 1948 crisis, and with it a reminder of the very real threat of the potential for “crippling” Indian interference with waters flowing into Pakistan.<sup>194</sup> India denied wrongdoing.<sup>195</sup> The Bank sent a team comprising General Wheeler, Mr Guinness, and Mr Bengston, to Pakistan to the relevant areas to investigate.<sup>196</sup> No firm conclusions on the cause of the shortage appear to have been drawn,<sup>197</sup> and the negotiations proceeded.

106. However, no material progress was made on the core (post-transitional period) substantive provisions of the Treaty until 1959. Between early 1958 and 1959, the negotiations focused almost exclusively on the nature and financing of the works required to effect the division of waters, with each side putting forward its own proposals (Pakistan, the Marhu

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<sup>193</sup> Letter from Mr M. S. Shaikh to Mr Sommers, 31 March 1958, **Exhibit P-0421**; Letter from Mr Sommers to Mr Iliff, 31 March 1958, **Exhibit P-0422**; Letter from H.E. M. Ali to Mr Sommers, 3 April 1958, **Exhibit P-0423**; Letter from Mr Gulhati to Mr Bengston, 7 April 1958, enclosing “Extract from the Minister’s speech” (the text of a speech given in the Lok Sabha by the Honorable Mr Patil, then Minister for Irrigation and Power, 26 March 1958), **Exhibit P-0424**; Letter from Mr Black to Prime Minister Nehru, 14 May 1958, **Exhibit P-0425**; Letter from Prime Minister Nehru to Mr Black (with enclosure), 5 June 1958, **Exhibit P-0426**.

<sup>194</sup> See Letter from Mr Black to Prime Minister Nehru, 14 May 1958, **Exhibit P-0425**; Letter from H.E. M. Ali to Mr Black, 4 June 1958, **Exhibit P-0427**; Embassy of Pakistan (Washington, D.C.), Press Release No. 31 “India’s Withholding of Pakistan’s Share of Irrigation Water Breach of International Agreement”, 7 June 1958, **Exhibit P-0428**; Inward Telegram to Commonwealth Relations Office from UK High Commission in Pakistan, 10 June 1958, **Exhibit P-0429**; Embassy of Pakistan (Washington, D.C.), Press Release No. 34 “India’s Stoppage of Canal Water Leads to Mass Evacuation From Affected Areas. Millions of Acres Turned Desert visited by Journalists”, 14 June 1958, **Exhibit P-0235**; Embassy of Pakistan (Washington, D.C.), Press Release No. 34 “This Undeclared War” (*DAWN* of Karachi, 9 June 1958), 16 June 1958, **Exhibit P-0430**; Letter from Mr Moynihan, Lahore to Mr Fowler, Karachi titled “Canal Waters” (with enclosure), 12 June 1958, **Exhibit P-0431**; Daily Report – Foreign Radio Broadcasts: Pakistan and Afghanistan, “Canal Closure Act of Aggression—Khuro”, 17 June 1958, **Exhibit P-0432**, p. 1; Embassy of Pakistan (Washington, D.C.), Press Release No. 35 “Stoppage of Canal Waters New Threat to Pakistan’s Lifelines”, 18 June 1958, **Exhibit P-0236**. Regarding the April 1948 crisis, see **Chapters 2, 3 and 7** of this Memorial.

<sup>195</sup> Daily Report, Foreign Radio Broadcasts: India, Ceylon, and Nepal, “Statement denies overuse of water”, 13 June 1958, **Exhibit P-0433**.

<sup>196</sup> Letter from Mr Bengston to Mr Mueenuddin (with enclosure), 17 June 1958, **Exhibit P-0434**; U.P.I, Karachi, Pakistan, 18 June 1958, **Exhibit P-0435**; Letter from Mr Gulhati to Mr Bengston, 24 June 1958, **Exhibit P-0436**.

<sup>197</sup> The Bank ultimately concluded that the period during which India made “excess withdrawals” “might [...] have been due to a legitimate error of calculation inherent in a situation where the regulating was being done without an exchange of information”, and recommended that “the two Governments should arrange to continue to exchange information on a permanent and regular basis and not wait for a water delivery crisis to call forth the exchange.” (World Bank, “Early Kharif 1958 Complaint, Summary and Conclusions”, (undated) 1958, **Exhibit P-0437**, ¶¶ 4 and 6).

Tunnel Plan and the London Plan; and India, its 1958 Indian Plan).<sup>198</sup> The critical importance to Pakistan of independence from Indian control over the timing and flow of the Western Rivers remained a recurrent theme of these negotiations. Pakistan stated at the outset (in March 1958) that it was “not prepared to consider any plan based on interference by India with the waters of the Chenab”,<sup>199</sup> and reiterated this position in its objections to the 1958 Indian Plan, which envisaged works on the Chenab in India to supply water to Pakistan.<sup>200</sup> As Alam observes, “Pakistan [...] refuse[d] India’s plans, because they often involved a continued dependence upon it for Pakistan’s water. This was something Pakistan was no longer willing, after April 1948, to countenance. Pakistan’s plans reflected its desire for an independent water supply [...]”<sup>201</sup>

107. In March 1959, the Bank had come to the conclusion that “[a] stage ha[d] [...] been reached in the Indus Waters discussions where [...] if there [was] to be a settlement at all within the framework of the cooperative approach, the Bank should put before the Government of India and the Government of Pakistan an engineering plan of its own”.<sup>202</sup> In formulating its 1959 Settlement Plan, the Bank proceeded on the “general principles of the Bank Proposal of 1954”, including as regards the division of the waters; namely that: “Pakistan should have the exclusive use of the waters of the three Western Rivers, - Indus, Jhelum and Chenab (except for existing uses and *relatively insignificant amounts for future uses in the State of Jammu and Kashmir*); India should have the exclusive use of the three Eastern Rivers, - Ravi, Beas and Sutlej.”<sup>203</sup> It also proceeded on the basis that “[a]ll the works necessary to divert, from the Western Rivers, supplies to replace those that Pakistan has historically enjoyed from the Eastern Rivers [the “Replacement” Works] should be under Pakistan control.”<sup>204</sup>

108. The proposal comprised a system of works for the implementation of the division of waters, which would ensure both parties (by way of the works themselves) certain irrigation

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<sup>198</sup> See Michel, 1967, **Exhibit P-0234**, pp. 244–247 and Alam, 1998, **Exhibit P-0245**, pp. 139–143. Months of protracted negotiations on the terms of a possible engineering plan to effect a division of the Western and Eastern rivers (by the progressive reduction of supplies to Pakistan from the Eastern rivers) took place in late 1958 and early 1959.

<sup>199</sup> Note to Files from Mr Iliff, 10 March 1958, **Exhibit P-0438**, ¶ (2).

<sup>200</sup> Pakistan stated that: “There are important major issues like the control of the Chenab by India, Pakistan’s dependence on India for deliveries etc. which are not acceptable to Pakistan under any circumstances” (Alam, 1998, **Exhibit P-0245**, p. 142).

<sup>201</sup> *Id.*, p. 143.

<sup>202</sup> World Bank Memorandum, “Indus Waters”, 26 March 1959, **Exhibit P-0439**, ¶ 1.

<sup>203</sup> *Id.*, ¶ 2(a) (emphasis added).

<sup>204</sup> *Id.*, ¶ 2(b).

and power development benefits.<sup>205</sup> The construction of the works in Pakistan and India was projected to cost just short of an equivalent (at that time) of USD 1 billion, and to take at least 10 years to complete.<sup>206</sup>

109. Within the next few weeks, Bank representatives travelled to New Delhi and Karachi to hold talks with the Indian and Pakistan Governments on the basis of the Bank's 1959 Settlement Plan. These talks focused, and resulted in broad agreement between the negotiating parties, on *inter alia*, (a) a system of works to be constructed in Pakistan; and (b) a 10-year transition period.<sup>207</sup> A press statement issued by the President of the Bank, Mr Black, on 18 May 1959 confirmed that the talks "succeeded in establishing certain general principles acceptable to both governments, that afford a firm basis for negotiating a final settlement".<sup>208</sup> On the basis of this broad agreement, Mr Black announced that he was moving to "firm up with the friendly Governments the amount of financial aid [to help in financing the costs of the Settlement Plan] they will be prepared to extend".<sup>209</sup> In the summer of 1959, Bank representatives met with representatives of the "Governments of friendly countries, who, from time to time, have expressed interest in the achievement of a negotiated settlement of the Indus Waters question", and secured their agreement to contribute the amounts remaining to implement the Settlement Plan.<sup>210</sup>

110. Draft heads of agreement prepared by the Bank in parallel with these talks, in April and May 1959, reflected the Bank's proposals both for the transitional arrangements and for the broader bargain.<sup>211</sup> Informal discussions regarding the draft heads of agreement focused, however, on the execution and financing of the transitional arrangements or Replacement Works. The Bank described these issues as "the most formidable obstacles so far as the matters

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<sup>205</sup> *Id.*, ¶¶ 6–7.

<sup>206</sup> *Id.*, ¶¶ 8–9.

<sup>207</sup> Office Memorandum, Mr Iliff to Files, "Indus Basin", 2 May 1959, **Exhibit P-0440**; Record of meeting between representatives of the Government of India and of the World Bank, 13 May 1959, **Exhibit P-0441**; Embassy of Pakistan (Washington, D.C.), Press Release No. 16 "Pakistan Government Conveys Willingness to go forward on the basis of World Bank Plan", 25 May 1959, **Exhibit P-0442** (emphasising that the Bank's 1959 Settlement Plan envisaged that "all the works would be under Pakistan's control, and therefore on the completion of the plan this country would secure an independent irrigation system free from the threats of interference"); World Bank, "Statement made by Chairman at Meeting of Executive Directors on May 26, 1959 regarding the Indus Waters Dispute", 26 May 1959, **Exhibit P-0443**.

<sup>208</sup> Government of Pakistan, Press Information Department, "Press Statement by the World Bank", Karachi, 18 May 1959, **Exhibit P-0444**.

<sup>209</sup> *Id.*

<sup>210</sup> World Bank Memorandum, "Indus Waters", July 1959, **Exhibit P-0445**, pp. 2–3.

<sup>211</sup> Indus Waters Treaty, Proposed Heads of Agreement (Draft dated 26<sup>th</sup> April 1959) (Secret), **Exhibit P-0446**; Indus Waters Treaty, Proposed Heads of Agreement (Draft dated 1<sup>st</sup> May 1959) (Secret), **Exhibit P-0447**.

in dispute between the two Governments are concerned”, such that it hoped that the “statesmanship” of the parties should render achievable agreement on the remaining matters.<sup>212</sup>

**C. THE FINAL TREATY NEGOTIATIONS IN 1959-1960, FOCUSING ON ARTICLE III AND ANNEXURE D**

**1. Discussions of India's hydro-electric uses of the Western Rivers in the lead up to the London meetings of August 1959**

111. Despite the broad success of the New Delhi and Karachi talks in spring 1959, a number of issues were left over for talks in London in August and September 1959 – most notably (for the purposes of these proceedings before the Court of Arbitration) “Indian Western River uses”.<sup>213</sup> The Bank's draft heads of agreement in April and May 1959 made provision for “Western Rivers to Pakistan, subject to reservations” *inter alia* for “hydel uses” – albeit “not involving consumption use of water” – as a basis for those further discussions.<sup>214</sup>

112. The issue of India's use of the Western Rivers for hydro-electric purposes emerged as a significant issue of divergence among all negotiating parties, including the Bank, in the early summer of 1959. In India's view, its uses of the Western Rivers while in Indian territory “must include” “non-consumptive uses” including “generation of hydro-electric power (provided it is developed from the run of the river without live storage).”<sup>215</sup>

113. Pakistan's primary position at the time remained that India should not be permitted to construct works for the generation of hydro-electric power on the Western Rivers in India. However, the Bank informed Pakistan that it could not support such a ban, as Mr Iliff reported in a Bank Memorandum sent to General Wheeler:

“When Mr. Black and I were in Karachi, the Pakistanis initially took the strong position that they could not acquiesce in India having the right to build even ‘run of the river’ hydro-electric works on any of the Western Rivers. We replied that we could not support Pakistan's Indus position as it would mean freezing for all time the available hydel potential of these rivers in their upper reaches. We suggested that the matter

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<sup>212</sup> World Bank, “Statement made by Chairman at Meeting of Executive Directors on May 26, 1959 regarding the Indus Waters Dispute”, 26 May 1959, **Exhibit P-0443**, p. 2.

<sup>213</sup> Secret Telegram from Mr Iliff to Mr Gulhati, 27 May 1959 (enclosed with Letter from Mr Iliff to the Ambassador of India to the US, 27 May 1959), **Exhibit P-0448**, ¶ 1(f).

<sup>214</sup> Indus Waters Treaty, Proposed Heads of Agreement (Draft dated 26<sup>th</sup> April 1959) (Secret), **Exhibit P-0446**, ¶ 2; Indus Waters Treaty, Proposed Heads of Agreement (Draft dated 1<sup>st</sup> May 1959) (Secret), **Exhibit P-0447**, ¶ 2; see also Letter from President Ayub to Mr Black and Mr Iliff, 18 May 1959, **Exhibit P-0449**, ¶ 5.

<sup>215</sup> Letter from Mr Iliff to Mr Mueenuddin (with enclosure), 26 June 1959, **Exhibit P-0450**, enclosure (Uses of the Waters of the Eastern Rivers), ¶ (ii).

should be left for detailed consideration during the London meeting and so it has been left, but I think we are going to have quite a tough passage on this point.”<sup>216</sup>

114. Pakistan's response to the Bank was firm, and conveyed the long-held concerns in Pakistan over the threats posed by Indian control over the Western Rivers. In a letter from Mr Iliff to Mr Gulhati of 16 June 1959, Mr Iliff reported to India that while Pakistan “accepts the general principle that India should be entitled to reserve on the Western Rivers [...] Hydel Uses not involving consumptive use of water”, it “expressed concern that the works that India constructed might interfere with the timely flow of water in the low-water season, and emphasised that they would look for some protection on that point.”<sup>217</sup> Mr Mueenuddin indicated as much in a message to Mr Iliff in mid-July 1959: “India should not”, he said, “have a ‘strangle hold on the Pak economy’” and the “Bank [...] should be considering possible safeguards”.<sup>218</sup> Thus while Pakistan was forced to soften its position on hydro-electric uses by India on the Western Rivers – to countenance them, where previously it had not – Pakistan remained clear that no such uses could be accepted if they were to interfere with the supplies of these rivers.

## **2. The London negotiations in August-September 1959, focusing on India's hydro-electric uses of the Western Rivers**

115. Negotiations on the heads of agreement for an international water treaty began in London in early August 1959.<sup>219</sup> Much of the discussion over this period focused on the terms on which India would be permitted to use the Western Rivers for the generation of hydroelectric power.

116. On 10 August 1959, Pakistan and India each put forward their own draft Heads of Agreement.<sup>220</sup> Both drafts included provisions reflecting, *inter alia*, (i) the fundamental division of the Eastern and Western Rivers, (ii) an understanding of the term “non-consumptive uses”, and (iii) reference to India's use of the Western Rivers for the generation of hydro-electric power as one of a number of specified “non consumptive uses”.

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<sup>216</sup> World Bank Office Memorandum from Mr Iliff to General Wheeler (without enclosure), 20 July 1959, **Exhibit P-0451**, p. 2.

<sup>217</sup> Letter from Mr Iliff to Mr Gulhati, 16 June 1959, **Exhibit P-0452**, ¶¶ 8 and 10.

<sup>218</sup> Letter from Mr J. B. Drisko (TAMS) to Mr Iliff, 13 July 1959, **Exhibit P-0453**, p. 1.

<sup>219</sup> World Bank, Minutes of Meeting, 5 August 1959, **Exhibit P-0454**.

<sup>220</sup> Indian Preliminary Tentative Draft Dated 10<sup>th</sup> August 1959, **Exhibit P-0132**; Pakistan Rough Draft (Secret), 10 August 1959, **Exhibit P-0133**; World Bank, Minutes of Meeting, 10 August 1959, **Exhibit P-0455**.



117. India's draft provided in relevant part as follows:

“Article 1 - Definitions

[...]

(6) The term ‘non-consumptive use’ means any control or use of water which, exclusive of seepage and evaporation of water incidental to the control or use, the water remains in or returns to the river systems substantially undiminished in volume. *Such uses shall be deemed to include use for [...] production of hydro-electric power [...] and such other beneficial uses as result in non-consumptive use of the water involved.*

[...]

Article 2 – Division of Waters

[...]

(2) The waters of the Eastern rivers shall be available for the use of India and the waters of the Western rivers shall be available for the use of Pakistan in accordance with the regulations and restrictions set out in Articles 3, 4 and 5.

[...]

Article 3 – Arrangements concerning Eastern Rivers

[...]

(6) In case Pakistan makes any use of those waters of the Eastern rivers which, after the end of the transition period, India may allow to flow into Pakistan, such use shall not confer on Pakistan any right whatsoever to demand continued releases of such waters by India.

Article 4 – Arrangements concerning Western Rivers

(1) India shall let flow the waters of the Western rivers free from any interference unless connected with the following uses restricted to the drainage basins of these rivers:

[...]

(iii) Non-consumptive uses of all kinds [...]

Provided further that:

(a) If for the purposes mentioned above, it becomes necessary to store any river water, such storage shall be confined to the tributaries of these rivers and no single storage shall exceed 0.1 MAF.

[...]

(2) India shall be entitled to generate hydro-electric power on the Western rivers in accordance with the following regulations:"<sup>221</sup> [*regulations not provided*]

118. Pakistan's draft provided in relevant part that:

“B. DIVISION OF WATERS

[...]

3. Pakistan will not object to the following uses of the waters of the Western Rivers by India or seek to impose a charge for any such use.

[...]

(b) *Non consumptive use, for example, fishing and fish culture, navigation, timber floating, recreation and [generation] of hydro-electric power, provided that*

(i) *Such use does not involve construction of any work which can be operated to interfere with the rate, quantity or quality of the natural flow of the river or its tributaries.*

Example:- Inter alia, any structure which holds up the river flow temporarily or stores it for a certain period of time for use in subsequent periods will be considered as a work which can be operated to interfere with the rate or quantity of the natural flow of the river.

(ii) The full details of the scheme together with the engineering data and plans of works are supplied to Pakistan sufficiently in advance of construction of such works.

[...]

(e) Other uses to which consent is given by a formal agreement registered by India and Pakistan with the Secretariat of the United Nations."<sup>222</sup>

119. Both parties' drafts clearly envisaged that India's hydro-electric uses of the Western Rivers would be a type of "non-consumptive use". However, India's draft also proposed that it be given a limited storage capacity for HEPs (among other uses) of 0.1 MAF per "single storage" (as opposed to per tributary, for example).

120. Pakistan's draft, for its part, was consistent both with its earlier Bank-induced

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<sup>221</sup> Indian Preliminary Tentative Draft Dated 10<sup>th</sup> August 1959, **Exhibit P-0132** (emphasis added).

<sup>222</sup> Pakistan Rough Draft (Secret), 10 August 1959, **Exhibit P-0133** (emphasis added).

concession to permit Indian hydro-electric uses on the Western Rivers, but also its long-standing position that such uses should be “non-consumptive”, and not be such as to allow India to interfere with the natural flow of the rivers. Pakistan’s draft thus offered India standing consent to the construction of works for the generation of hydro-electric power, provided that those works were not capable of being operated to interfere with the rate, quantity or quality of the natural flow of the river or its tributaries.

121. The initial reaction of Mr Gulhati to Pakistan’s draft was that “he would be prepared to accept a definition of storage for hydel uses on the Western Rivers along the following lines. The average daily flow above the dam shall be the same as the average daily flow below the structure. This means no live storage.”<sup>223</sup>

122. The parties addressed the topic of Indian hydro-electric uses of the Western Rivers in a series of further meetings between 13 August and 8 September 1959. The record of the first meeting between the Bank and Indian representatives, on 13 August, is largely illegible but makes reference to “the weekly load factor in relation to the peak”, the “filling period”, a possible compromise in giving Pakistan “any and all designs of works to be constructed”, and whether storage should be limited per river or per structure (as India’s 10 August draft had envisaged).<sup>224</sup> These topics were discussed between the Bank and Pakistan’s representatives on 14 August 1959. Mr Mueenuddin conveyed Pakistan’s principal concern regarding hydro-electric uses by India on the Western Rivers, namely “the extent of the harm that India could do should she operate the structures malevolently.”<sup>225</sup> He offered to look at this issue “closely” and “come up with some suggestions.”<sup>226</sup>

123. The following day, the Bank and Pakistan continued their discussions on the topic of Indian hydro-electric uses on the Western Rivers, and considered “various drafts” of a formula for such uses. The minutes of that meeting record that “agreement was reached on the general principles”.<sup>227</sup>

124. The formula “worked out” by the Bank and India set out two core principles of an Indian run-of-river plant on the Western Rivers:

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<sup>223</sup> World Bank, Minutes of Meeting, 10 August 1959, **Exhibit P-0455**, ¶ 5.

<sup>224</sup> World Bank, Minutes of Meeting (Indian representatives), 13 August 1959, **Exhibit P-0456**, ¶¶ 1, 2 and 4.

<sup>225</sup> World Bank, Minutes of Meeting (Pakistan representatives), 14 August 1959, **Exhibit P-0457**, ¶ 1.

<sup>226</sup> *Id.*, ¶ 3.

<sup>227</sup> World Bank, Minutes of Meeting (Pakistan representatives), 15 August 1959, **Exhibit P-0458**.

“In a run-of-the-river hydro-electric plant, the *works shall be so designed* that they will not be able to retain water above the operating pool level except for a temporary retention due to surcharge storage. The operating pool level is the fluctuating level due to the weekly and daily loads. Surcharge storage is that above the maximum level of the operating pool.

The *works will be operated so that* the volume of water received in the river upstream of a power house, [during a seven- or 24-hour period, depending on the location of the power house], will be delivered into the river below the power house during the same period.”<sup>228</sup>

125. In a letter of 17 August 1959 updating the Secretary of the Ministry of Works, Irrigation and Power of the progress of the negotiations, Mr Mueenuddin recalls that he “objected [...] strongly” to the Bank/Indian formulation:

“I objected to [the Bank/Indian formula] strongly, as I felt that it gave India the right to build whatever works she required provided she restricted herself in their operation to certain conditions. It was stressed by me that we do not want any works to be built which gave India the power to hurt us and that the restriction should be upon the design [i.e., not only operation] of such works.”<sup>229</sup>

126. Pakistan put forward its own formula in response. Its draft contained detailed provisions on a possible formula for India's hydro-electric uses – including design, construction, and operation parameters.<sup>230</sup> Unlike the Bank/Indian proposed formula, and consistent with Pakistan's long-expressed concerns, Pakistan's proposed formula restricted both the design and the operation of HEPs. The draft is important, because it appears to be the first time that the concept of “pondage” was introduced in the negotiations. The draft bears setting out in full:

“1. No works shall be built to generate hydro-electric power on the Western River above Pakistan border except run-of-the-river hydro-plants which do not interfere with the natural flow of the river except for the temporary detention of surcharge storage above an uncontrolled spill way,

provided that

(a) the volume of water received in the river upstream of a power house, during a seven day period, shall be delivered automatically into the river downstream of the power house during the same period.

(b) if the power house is located on the main stem of the Chenab River above ----- ; the volume of water received in the river upstream of the power house, during a 24

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<sup>228</sup> Letter from Mr Mueenuddin to Mr W. A. Sheikh (with enclosures), 17 August 1959, **Exhibit P-0365**, Enclosure I – General Wheeler's draft, “Run-of-the-River Hydro-Electric Plants”, 15 August 1959 (emphasis added).

<sup>229</sup> *Id.*, p. 1.

<sup>230</sup> *Id.*, Enclosure II – Draft given by Pakistan on Hydel formula on 15.8.59.

hour period, shall be delivered automatically into the river downstream of the power house during the same period.

(c) no power house shall be constructed on the main stem of the Chenab river within ----- miles upstream of the Pakistan border.

(d) the weekly load factor shall not be less than -----%.

2. In the case of run-of-the-river hydro-electric developments which involve construction of a dam across a stream, the following considerations shall govern the design, construction and operation of such works.

(a) there shall be no live storage which can be operated except as provided below.

(b) the intake to the power house shall be fixed at such a level that the pondage above that level is adequate only to cater for the weekly load factor of the power plant (daily load factor in the case of a power house involving the construction of a dam on the main stem of the Chenab river).

(c) the spill way shall have a fixed crest without gates.

(d) the reservoir above the dam shall be filled only during the period 1st July to 20th August in one or more years with prior intimation to the Government of Pakistan.

(e) no dam shall be constructed on the main stem of the Chenab river within ----- miles upstream of the Pakistan border.

(f) the weekly load factor shall not be less then -----%.

3. The design of any work provided for in paragraph 1 or 2 shall be communicated to Pakistan in advance so as to afford Pakistan a reasonable opportunity of objecting before the construction or any part of it is begun. Any dispute as to whether the design conforms to the provisions of paragraphs 1 or paragraph 2, as the case may be, shall be submitted to arbitration.”<sup>231</sup>

127. Mr Mueenuddin's 17 August letter also records that the Bank was considering a “revised draft” of the formula, but that “all the three parties are agreed on the substance and there should be no real difficulty in finding a formula which is acceptable to both the parties”.<sup>232</sup> Elements of these drafts found their way into the final version of the Treaty. At their core was the idea that Indian HEP construction on the Western Rivers was limited to run-of-river HEPs, which drive a turbine through the natural flow of the river, with minimal or no storage.

128. Over subsequent days, between 20 and 25 August 1959, the Bank met separately with Indian and Pakistani negotiators, exchanging drafts and working towards an agreed draft

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<sup>231</sup> *Id.*.

<sup>232</sup> *Id.*, p. 1.

formula for hydro-electric uses on the Western Rivers in India.<sup>233</sup> The drafts themselves are not contained within the World Bank archives. The Meeting Minutes suggest that there was broad agreement on the core provisions for hydro-electric uses by this point in time, and that debate focused on specific aspects of the formula, such as a carve-out for “very small capacity” plants,<sup>234</sup> and a formula for the filling of the dead storage at HEPs on the Western Rivers.<sup>235</sup>

129. In the background to the parties' discussions, significant divergence emerged in relation to India's consumptive uses, which prompted the President of Pakistan to write to Mr Black on 21 August 1959. His letter emphasised Pakistan's consistent position that it must be guaranteed the “total flow of Western Rivers, excepting for insignificant uses in Jammu and Kashmir only”. A new request by India for “no limit to uses from Indus, Jhelum above lake, and Chenab about RL 2000 covering Jammu and Kashmir, as well as Indian territory [...] [and] storages” was anathema to Pakistan's consistent and fundamental position.<sup>236</sup>

130. The points conveyed by Pakistan's President to Mr Black were also recorded in an *aide memoir* dated 22 August 1959:

“The World Bank had all along recognised that in return for surrendering her rights on the Eastern rivers Pakistan will get the natural flow of the three Western rivers along with their tributaries for her exclusive use and benefit and that India will give up all the rights she claims to the waters of these Western rivers. The only exception to which Pakistan was willing to agree under pressure of the Bank was to guarantee only the historic (pre-partition) uses in Jammu and Kashmir which has been met from the flow of the Chenab and Jhelum together with such insignificant additional uses which may be met by minor extensions from existing channels or from small feeder streams. This position was accepted both by India and the Bank.

2. India has now asked for her right to use of the water without limit of Indus, Jhelum above Wular Lake, and Chenab above RL 2000, covering Jammu and Kashmir as well as Indian territory. They also demand the right to construct storages.

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<sup>233</sup> World Bank, Minutes of Meeting (Indian representatives), 20 August 1959, **Exhibit P-0459**; World Bank, Minutes of Meeting (Pakistan representatives), 20 August 1959, **Exhibit P-0460**; World Bank, Minutes of Meeting (Indian representatives), 21 August 1959, **Exhibit P-0461**; World Bank, Minutes of Meeting (Pakistan representatives), 21 August 1959, **Exhibit P-0462**; World Bank, Minutes of Meeting (Indian representatives), 22 August 1959, **Exhibit P-0463** [note: the Minutes record a meeting on Saturday 21 August, but the Saturday was 22 August]; World Bank, Minutes of Meeting (Pakistan representatives), 23 August 1959, **Exhibit P-0464**; World Bank, Minutes of Meeting (Indian representatives), 23 August 1959, **Exhibit P-0465** (recording, for example, India's agreement that specified design particulars and data would be submitted to Pakistan six months prior to construction); World Bank, Minutes of Meeting (Indian representatives), 24 August 1959, **Exhibit P-0466**; World Bank, Minutes of Meeting (Indian representatives), 25 August 1959, **Exhibit P-0467**.

<sup>234</sup> See, e.g., World Bank, Minutes of Meeting (Indian representatives), 23 August 1959, **Exhibit P-0465**, ¶ 4 and World Bank, Minutes of Meeting (Indian representatives), 24 August 1959, **Exhibit P-0466**, ¶ 3.

<sup>235</sup> World Bank, Minutes of Meeting (Indian representatives), 24 August 1959, **Exhibit P-0466**, ¶ 1.

<sup>236</sup> Message from President Ayub to Mr Black, 21 August 1959, **Exhibit P-0468**.

3. This is a complete reversal of the position that the entire flow of the Western rivers excepting for the insignificant uses in Jammu and Kashmir will be available to Pakistan. Pakistan Government consider India's present demand untenable and cannot accept it. This demand, if acceded to, would put India in a position to control Western rivers also and at the same time prejudice Pakistan's stand on Kashmir. The Government of Pakistan have, therefore, requested the Bank to ensure that the uses of the water of the Western rivers in Jammu and Kashmir remain truly insignificant and that the water treaty should be so worded as not to prejudice Pakistan's position regarding Jammu and Kashmir territory."<sup>237</sup>

131. On the request of the Vice President of the Bank, Mr Mueenuddin successfully persuaded Pakistan's President to "reserve judgment", allowing the negotiations to proceed.<sup>238</sup> In his response to President Ayub, Mr Black suggested that the "solution of this difficult question" was likely to be the "only remaining obstacle to be surmounted before a settlement can be reached", and "strongly urge[d]" Pakistan to "refrain from taking any uncompromising stand" until the Bank had been able to give further thought to the issue.<sup>239</sup> This issue continued to prevent agreement on Annexures C (Agricultural Uses), D (HEPs), and E (Storage) until as late as spring 1960.<sup>240</sup>

132. On 25 August 1959, the negotiations on hydroelectric uses by India on the Western Rivers had reached a point where the Bank commenced a series of joint meetings with the parties or their engineers to flesh out the details of this aspect of the agreement.<sup>241</sup> Discussions focused around: (a) the clause covering the "Filling Period of the dead storage";<sup>242</sup> (b) India's proposed carve-out for small plants from the restraints applicable to HEPs (to which Mr Mueenuddin agreed, "provided that no storage was permitted"<sup>243</sup>);<sup>244</sup> and (c) "the list of hydraulic and hydrological data and design particulars to be communicated by India to Pakistan

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<sup>237</sup> Letter from Mr Ahmad, Embassy of Pakistan to the United States, to Mr Laylin (with enclosure), 27 August 1959, **Exhibit P-0366**, Annex (emphasis original).

<sup>238</sup> Letter from Mr Iliff to Mr Black, 24 August 1959 (with enclosures), **Exhibit P-0378**, p. 1.

<sup>239</sup> Telegram from Mr Black to President Ayub, 30 August 1959, **Exhibit P-0408**, ¶ 3.

<sup>240</sup> See paragraphs 158-170 below.

<sup>241</sup> World Bank, Minutes of Meeting, 25 August 1959, **Exhibit P-0469**; World Bank, Minutes of Meeting, 27 August 1959, **Exhibit P-0470**; World Bank, Minutes of Meeting, 10am, 2 September 1959, **Exhibit P-0471**; World Bank, Minutes of Meeting, 3pm, 2 September 1959, **Exhibit P-0472**; World Bank, Minutes of Meeting (Pakistan representatives), 3 September 1959, **Exhibit P-0473**; World Bank, Minutes of Meeting, 8 September 1959, **Exhibit P-0474**.

<sup>242</sup> See, e.g., World Bank, Minutes of Meeting, 8 September 1959, **Exhibit P-0474**, ¶ 5, showing that the parties had reached in principle agreement on the principles that (a) "filling should only be made when water is surplus", and (b) "that water is available at site".

<sup>243</sup> World Bank, Minutes of Meeting, 25 August 1959, **Exhibit P-0469**, ¶ 2.

<sup>244</sup> See also, World Bank, Minutes of Meeting, 3pm, 2 September 1959, **Exhibit P-0472** and World Bank, Minutes of Meeting (Pakistan representatives), 3 September 1959, **Exhibit P-0473**, ¶ 3; World Bank, Minutes of Meeting, 8 September 1959, **Exhibit P-0474**, § D (p. 2).

six months before construction.”<sup>245</sup> The parties also discussed, towards the end of the London negotiations, a substantive new sub-paragraph for the Heads of Agreement – proposed by Pakistan – “covering the variations in levels of the operating pool due to load fluctuations” (an amendment which was “accepted by Gulhati” at the meeting at which it was proposed).<sup>246</sup> This became a new sub-paragraph in paragraph 3 of Annex B of the Heads of Agreement 1959.<sup>247</sup>

133. Towards the end of the London negotiations, Mr Mueenuddin wrote to Mr Sheikh, the Secretary of the Ministry of Works, Irrigation and Power of Pakistan, to update him. Mr Mueenuddin observed that discussions had made it clear that India was interested in storage not only for “consumptive use” and flood control, but also for “generation of power.”<sup>248</sup> He reported his response to India’s latest demands to the Secretary:

“I have made it quite clear that *our Government cannot possibly agree to storages which, if malevolently operated, would make an appreciable difference to our economy. I have left Iliff in no doubt that Pakistan would not agree to giving India a stranglehold over her economy.* He is now exploring with Gulhati the question quantitatively so that they can come up with some precise proposals whose effect on us we can assess. I have also informed Iliff that I would be prepared to recommend a different attitude provided the implementation and observation of the treaty is guaranteed by nations like the U.S. and U.K. He feels that those nations would not be agreeable to giving such a guarantee, specially as India is not likely to welcome such a guarantee.”<sup>249</sup>

134. Five days later, after the end of the London talks, Mr Mueenuddin sent Mr Sheikh a further update. He reported that:

“As regards our fears about Indian control over the waters of the Western Rivers, the Bank is refusing to take a definitive position. Iliff contends that the Bank cannot formally admit that India might default from her Treaty obligations, but at the same time he appreciates and understands our fears. *I have, however, made it quite clear to Gulhati that our Government would not, under any circumstances, agree to the construction of works which would give India the power to do us effective harm.* The question whether the potential for harm is effective or not can only be studied in the context of definite proposals.”<sup>250</sup>

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<sup>245</sup> World Bank, Minutes of Meeting, 27 August 1959, **Exhibit P-0470**, ¶ 1; World Bank, Minutes of Meeting, 2 September 1959, **Exhibit P-0471**; World Bank, Minutes of Meeting (Pakistan representatives), 3 September 1959, **Exhibit P-0473**; World Bank, Minutes of Meeting, 8 September 1959, **Exhibit P-0474** (at which the “mutually agreed list was finally drafted” (§ C, ¶ 3)).

<sup>246</sup> World Bank, Minutes of Meeting, 8 September 1959, **Exhibit P-0474**, § B, ¶ 1.

<sup>247</sup> Heads of Agreement 1959, **Exhibit P-0136**, ¶ 3(b): “The volume between the maximum and minimum levels of the operating pool shall not exceed that required to meet the daily or weekly load fluctuations as the case may require.”

<sup>248</sup> Letter from Mr Mueenuddin to Mr W. A. Sheikh, 10 September 1959, **Exhibit P-0475**, ¶ 5.

<sup>249</sup> *Id.* (emphasis added).

<sup>250</sup> Letter from Mr Mueenuddin to Mr W. A. Sheikh, 15 September 1959, **Exhibit P-0134**, ¶ 6 (emphasis added).



135. Pakistan's firm opposition to Indian storage on the Western Rivers, which would give it the capacity to interrupt the natural flow of those rivers, was a constant feature of the negotiations until well into 1960.

### 3. The Heads of Agreement 1959

136. The London talks of August-September 1959 led to the Bank's preparation of a new draft "Heads of Agreement for an International Water Treaty", dated 15 September 1959 (the Heads of Agreement 1959).<sup>251</sup> As the Memorandum by the Bank Representative, accompanying the Heads of Agreement 1959, explained, these Heads of Agreement reflected "the extent to which agreement [had] been reached between the representatives of India and Pakistan, on an ad referendum basis, in the course of the discussions that [had] taken place in London during August and September, 1959" and were now for "consideration by the two Governments".<sup>252</sup> Notwithstanding the impression of agreement between the parties on issues including Indian hydro-electric uses created by the Heads of Agreement 1959, correspondence from spring 1960, as described in **Section 5C.4** below, indicates that this issue was bitterly disputed until the final months of negotiations.

137. Articles II and IV of the Heads of Agreement 1959 set out the basic scheme of the division of waters and the "let flow" obligation on India as regards the Western Rivers, while Article V(4) attempted to address Pakistan's concerns regarding Indian storage on the Western Rivers. They provided that:

"Article II – Division of Waters

Subject to the provisions of Articles III, IV and V below, the waters of the Eastern Rivers shall be available for the exclusive use of India and the waters of the Western Rivers shall be available for the exclusive use of Pakistan.

[...]

Article IV – Arrangements Concerning Western Rivers

(1) India shall let flow the waters of the Western Rivers free from any interference except for the following uses restricted in the case of each river to the drainage basin of that river:

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<sup>251</sup> Heads of Agreement 1959, **Exhibit P-0136**. See also, **Chapter 7B.4** of Pakistan's Memorial.

<sup>252</sup> Indus Waters, Heads of Agreement for an International Water Treaty: Memorandum by the Bank Representative, 15 September 1959, **Exhibit P-0135**, ¶ 1 (emphasis original).

- (i) Domestic Uses;
- (ii) Non-consumptive uses [defined in Article I(5) as follows: “[excludes use for agricultural purposes or for the generation of hydro-electric power, and] means any control or use of water for navigation, flood control, fishing and fish culture, wildlife and other like beneficial purposes, provided that, exclusive of seepage and evaporation of water incidental to the control or use, the water remains in or returns to the same river or its tributaries, undiminished in volume within the practical range of measurement.”]; and
- (iii) Consumptive Uses as set out below.

NOTE

The question of consumptive uses is being approached on the basis of fixing a quantum of use to be specified in the Treaty.

(2) India shall be entitled to generate hydro-electric power on the Western Rivers in accordance with the provisions of Annex “B”.

(3) Pakistan shall be entitled to the unrestricted use of the waters of the Western Rivers except to the extent specified in Paragraphs (1) and (2) of this Article.

Article V – Arrangements Concerning Eastern and Western Rivers

[...]

(4) Each party declares its intention to operate its storage or other dams in such manner, consistent with the normal operations of its hydraulic systems, as to avoid, as far as feasible, material damage in the territory of the other.

[...]”<sup>253</sup>

138. The detailed provisions that had been discussed between the parties in the London negotiations that led up to the Heads of Agreement 1959 on the topic of HEPs were set out in Annex B. This was the forerunner to what became Annexure D to the Treaty, and defined “run-of-river” plants as:

“[A] hydro-electric plant at which power is developed without live storage as an integral part of the plant, except for the storage in the operating pool, that is to say, the pondage required to meet fluctuations in the discharge of the turbines arising from variations in the daily or weekly load of the power plant.”<sup>254</sup>

139. Annex B then set out a series of provisions relating to the “Design” criteria for run-of-river plants, the “Operation” of such plants, and for “Small Plants”. As noted above, the sub-

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<sup>253</sup> Heads of Agreement 1959, **Exhibit P-0136**.

<sup>254</sup> *Id.*, Annex B, ¶ 2.

titles (“Definition”, “Design” and “Operation”, etc.) were removed in subsequent drafts, and the final version, of Annexure D.<sup>255</sup> There are close parallels between the Treaty’s final provisions and those in Annex B of the Heads of Agreement 1959. In particular, paragraph 3 (the progenitor of elements of Paragraphs 2 and 8 of Annexure D) provided, in relation to the design of run-of-river HEPs, that:

“3. Except as provided in paragraph 14[] below [“Small Plants”], the design of any ‘Run-of-River’ plant shall conform to the following criteria:

a. The works themselves shall not be capable of storing water above the maximum level of the operating pool as specified in the design. Uncontrollable retention of water above the maximum level of the operating pool shall not be deemed to be live storage. *[The progenitor of Paragraphs 8(a) and 8(b).]*

b. The volume between the maximum and minimum levels of the operating pool shall not exceed that required to meet the daily or weekly load fluctuations as the case may require. *[The progenitor of Paragraphs 8(c) and 2(c).]*

c. The intake of the turbines shall be located at the highest level consistent with satisfactory construction and operation of the plant as a ‘Run-of-River’ plant. *[The progenitor of Paragraph 8(f).]*

d. In the case of a plant to be constructed on the main stem of the River Chenab at a site below Kotru (Map Reference), a regulating basin shall be incorporated in order to even out fluctuations in the discharge from the turbines. *[The progenitor of Paragraph 8(g).]*<sup>256</sup>

140. Annex B (paragraph 4) also provided that India would be required, “at least six months in advance of the beginning of construction”, to communicate to Pakistan in writing, the information specified in Appendix I. Paragraph 4 stated that this was “[t]o enable Pakistan to apply the criteria mentioned in paragraph 3”. That information comprised:<sup>257</sup>

- (a) the location of the plant;
- (b) hydrological data, including “daily river discharge data on which the design is based”, for up to 25 years, and “[g]auge – discharge curve or curves for site”;
- (c) hydraulic data, including “[m]aximum and minimum operating pool levels and pondage in the operating pool between these two levels, along with calculations

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<sup>255</sup> April 1960 draft of Annexure D, **Exhibit P-0476**; Indus Waters Treaty 1960, Annexure D: Generation of Hydro-Electric Power by India on the Western Rivers (Draft dated 6<sup>th</sup> June 1960) (“**June 1960 draft of Annexure D**”), **Exhibit P-0478**; Indus Waters Treaty 1960, **PLA-0001**, Annexure D.

<sup>256</sup> Heads of Agreement 1959, **Exhibit P-0136**, Annex B, ¶ 3.

<sup>257</sup> *Id.*, Annex B, Appendix I.

showing the pondage required to meet the fluctuations due to the weekly or daily loads”, dead storage capacity, and “maximum designed flood level above spillway crest”;

- (d) particulars of design, including the “[m]ean discharge proposed to be passed through the plant, initially and ultimately, and variations in the discharge on account of daily and weekly load fluctuations”, and “[p]roposed maximum installed capacity of power plant (exclusive of standby units) both firm and secondary”; and
- (e) general information, including the “[e]ffect, if any, of proposed development on the flow pattern above and below other plants downstream.”

141. These requirements were reflected, with just a handful of minor changes, in what became Appendix II to Annexure D of the final Treaty.

142. So far as the operation of such plants was concerned, there are also close parallels between the Heads of Agreement 1959 and the final Treaty. While the parties had not yet agreed on detailed arrangements for the filling of the dead storage, the Heads of Agreement reflected the principle – subsequently operationalised at Paragraph 14 of Annexure D and Paragraph 18 of Annexure E – that filling would be “carried out only when there is surplus water in the rivers” (Annex B, paragraph 8).

143. The parties also agreed on broad parameters for the operation of the plants:

“10. Except as provided in paragraph 11 below, the works shall be so operated that (a) the volume of water received in the river upstream of a power-house, during any period of seven consecutive days, shall be delivered into the river below the power-house during the same seven-day period; and (b) in any one period of 24 hours within that seven-day period, the volume delivered into the river below the power-house shall be not less than 50%, and not more than 150%, of the volume received above the power-house during the same 24-hour period.

11. Where a power-house is located at a site on the main stem of the River Chenab below Ramban, the volume of water received in the river upstream of the power-house during any period of 24 hours shall be delivered into the river below the power-house within the same period of 24 hours, and the provisions of paragraph 10 above shall not apply.”<sup>258</sup>

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<sup>258</sup> *Id.*, Annex B, ¶¶ 10–11.

144. The final Treaty made only certain numerical amendments and minor drafting amendments to these provisions (at Paragraph 15).<sup>259</sup>

**4. Drafting of the detailed provisions of the Indus Waters Treaty and its Annexures, October 1959 to September 1960**

145. In late October 1959, the parties met in Washington, D.C. with a view to reaching agreement on the transitional arrangements and other outstanding areas of agreement, and to commencing work on a draft text treaty.<sup>260</sup>

146. Pakistan has located in its files an early draft of the treaty (for circulation in the working group) dated 10 November 1959.<sup>261</sup> The 10 November 1959 draft set out in some detail, for the first time, India's "let flow" obligation on the Western Rivers. It provided that:

"ARTICLE III – PROVISIONS REGARDING WESTERN RIVERS

(1) Pakistan shall have the unrestricted use of all the waters of the Western Rivers which it is entitled to receive under the provisions of Paragraph (2) of this Article.

(2) Except for the following uses [restricted in the case of each river to the drainage basin of that river]:

(a) Domestic Use [...]

(b) Non-Consumptive Use

(c) Agricultural Use [...]

(d) Generation of hydro-electric power, as set out in Annexure \_\_.

India shall be under a [permanent] legal obligation to let flow all the waters of the Western Rivers, and agrees to permit no interference with those waters,

[...]

(5) Except as provided in Annexure \_\_ and Annexure \_\_, India shall not [permit the construction of any storage]\* [store or construct any storage works] on the Western Rivers."<sup>262</sup>

147. The generation of hydro-electric power was listed as one of the express exceptions to

<sup>259</sup> The final Treaty adopted 30% / 130% (Paragraph 15, Annexure D) (other than where a Plant is located at a site on the Chenab Main below Ramban).

<sup>260</sup> Cable from Mr Iliff to Sir Kenelm Guinness (for Mr Mueenuddin), 23 September 1959, **Exhibit P-0479**.

<sup>261</sup> Indus Basin Water Treaty, draft dated 10<sup>th</sup> November 1959 (with additions and changes suggested by the Pakistan Delegation) (secret), **Exhibit P-0480**.

<sup>262</sup> *Id.*.

India's "let flow" obligation and was indicated to be further addressed in an Annexure to the treaty.<sup>263</sup> Like the Heads of Agreement 1959, the 10 November draft treaty expressly carved India's hydro-electric use of the Western Rivers out of the term "non-consumptive uses" (at draft article 1(6)).

148. The first draft of the treaty appearing in the World Bank archives is that of 24 November 1959 ("**November 1959 draft**").<sup>264</sup> Like the draft of 10 November, the 24 November draft carved out "use for the generation of hydro-electric power" from the definition of the term "non-consumptive use",<sup>265</sup> and envisaged (without providing a draft) an annexure (C) setting out India's right to the use of the Western Rivers for the generation of hydro-electric power.<sup>266</sup> Certain non-substantive drafting changes were also made to Article III(2). In contrast to the 10 November draft, however, the 24 November introduced a rudimentary definition of "interference with the waters" (i.e., to mean "only diversion or storage of the waters of the Rivers").<sup>267</sup> The November 1959 draft also contained an equivalent to Article III(5) in the 10 November draft, providing that "Except as provided in Annexure B [Indian Agricultural Use ...] and Annexure C [Hydro-electric Plants ...], India shall not store any water of, or construct any storage works on the Western Rivers."

149. The first draft presented to the two Governments was that of 9 December 1959 (the December 1959 draft).<sup>268</sup> Like the November drafts, the December 1959 draft set out in detail India's obligation to "let flow" the Western Rivers in Article III and, building on the 24 November 1959 draft, included a revised definition of "interference with the waters":

**"ARTICLE I**

**Definitions**

[...]

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<sup>263</sup> *Id.*

<sup>264</sup> Indus Waters Treaty draft (for circulation within the working group only) [without Annexures] ("**November 1959 draft**"), **Exhibit P-0137**. See also World Bank – list of riders proposed by India and Pakistan respectively for inclusion in the draft treaty text dated 24 November 1959, **Exhibit P-0138** (none of the proposed riders are material to the issues addressed in the main text above).

<sup>265</sup> November 1959 draft, **Exhibit P-0137**, Article I(8).

<sup>266</sup> *Id.*, Article III(2)(d).

<sup>267</sup> *Id.*, Article I(12).

<sup>268</sup> December 1959 draft, **Exhibit P-0139**; Letter from Mr Iliff to Mr Mueenuddin, 14 December 1959, enclosing Memorandum by Bank Representative dated 9 December 1959, **Exhibit P-0481**. See also, **Chapter 7B.4** of Pakistan's Memorial.

(12) The term 'interference with the waters' means any act of withdrawal therefrom or any man-made obstruction to their flow which causes a change in the volume of the daily flow of the waters.

[...]

### ARTICLE III

#### Provisions Regarding Western Rivers

(1) Pakistan shall be entitled to receive for unrestricted use all those waters of the Western Rivers which India is under obligation to let flow under the provisions of Paragraph (2) of this Article.

(2) India shall be 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 (except as provided in Annexure C ( )) in the case of each of the rivers Indus, Jhelum and Chenab to the drainage basin thereof:

[...]

(d) Generation of hydro-electric power, as set out in Annexure D.

[...]

(4) Except as provided in Annexure E, India shall not store any water of, or construct any storage works on, the Western Rivers.”<sup>269</sup>

150. The definition of “interference with the waters” bears close resemblance to the definition used in the final text of the Treaty, at Article I(15), save for the subsequent introduction of a proviso for obstructions which “involve[] only an insignificant and incidental change in the volume of the daily flow”.<sup>270</sup>

151. As regards Article III, the formulation of the December 1959 draft maintained use for the generation of hydro-electric power as an exception to India's “let flow” obligation (Article III(2)). However, there was a shift in the language used to describe this exception, from an “entitlement” of India (in Article IV(2) of Annex B of the Heads of Agreement 1959<sup>271</sup>), to a statement of obligation subject to a defined exception in the December 1959 draft, that India “shall not permit any interference with these waters except for the following uses [...] (d) Generation of hydro-electric power”.<sup>272</sup> This shift in language from “entitlement” to “exception” is significant as it points to the primacy of the “let flow” obligation and the limiting

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<sup>269</sup> December 1959 draft, **Exhibit P-0139**.

<sup>270</sup> Indus Waters Treaty 1960, **PLA-0001**.

<sup>271</sup> Heads of Agreement 1959, **Exhibit P-0136**.

<sup>272</sup> December 1959 draft, **Exhibit P-0139**.

character of the exception.

152. In addition, in contrast to the November 1959 draft, the only exception envisaged in the December 1959 draft to the prohibition on Indian storage on the Western Rivers under Article III(4) was for those storage works specifically envisaged in Annexure 'E' (Construction of Storage Works by India on the Western Rivers). The reference to the HEPs annexure (which had become, by that point in time, Annexure 'D') was omitted in Article III(4) of the December 1959 draft.<sup>273</sup> The result was that HEPs were – at least at that stage – caught by the prohibition on Indian storage, and only such storage as was specifically envisaged by draft Annexure E (Construction of Storage Works by India on the Western Rivers) was permitted.<sup>274</sup>

153. A Bank Memorandum accompanying the December 1959 draft conveyed to the governments explained that the provisions to be included in the eight Annexures remained, at that time, “for discussion and agreement”.<sup>275</sup> The Bank proposed that work continue in Washington on the drafting of those annexures.<sup>276</sup>

154. In a letter to Pakistan's Secretary of Works, Irrigation & Power, Mr Mueenuddin reported that the December 1959 draft “contains a very large number of changes that have been made in the London Heads of Agreement and the vast majority of these are in our favour.”<sup>277</sup> In addition, Mr Mueenuddin explained that the December 1959 draft “by and large [...] safeguards Pakistan's interests within the limits imposed by the agreement in principle reached between Mr. Black and the Government of India and the Government of Pakistan, during Mr. Black's visit to the Sub-continent in May, 1959.”<sup>278</sup>

155. Mr Mueenuddin's letter highlighted the following improvements in the December 1959 draft as against the Heads of Agreement 1959:

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<sup>273</sup> *Id.*, Article III(4).

<sup>274</sup> The reference to Annexure D was also absent in the corresponding prohibition on storage contained in Article III(4) of the April 1960 draft (Indus Waters Treaty 1960 draft of 20 April 1960 [without Annexures] (“**April 1960 draft**”), **Exhibit P-0143**), but was reinstated in Article III(4) of the June 1960 draft (Indus Waters Treaty, draft of 8<sup>th</sup> June 1960 [without Annexures] (“**June 1960 draft**”), **Exhibit P-0151**) and remained in the final Treaty (Indus Waters Treaty 1960, **PLA-0001**).

<sup>275</sup> Letter from Mr Iliff to Mr Mueenuddin, 14 December 1959, enclosing Memorandum by Bank Representative dated 9 December 1959, **Exhibit P-0481**, Memorandum, ¶ 2.

<sup>276</sup> *Id.*, ¶ 4.

<sup>277</sup> Letter from Mr Mueenuddin to Mr W.A. Shaikh (with enclosure), 15 December 1959, **Exhibit P-0140**, p. 1.

<sup>278</sup> *Id.*.



“[As regards draft Article III(1) of the December 1959 draft, compared to Article IV(3) of the Heads of Agreement 1959:] [...] This for the first time spells out ‘rights’ in the Western River waters. [...]

[As regards draft Article III(2) of the December 1959 draft, compared to Articles IV(1) and IV(2) of the Heads of Agreement 1959:] There are the following improvements -- first, India's duty to let flow the waters has been spelled out as an obligation; [...] fifth, generation of Hydro-electric power has been described more mildly as a use and not as something to which India is ‘entitled’, and further has been subjected to the condition that this use is to be restricted in the case of each of the Western Rivers to the drainage basin thereof.”<sup>279</sup>

156. Pakistan subsequently queried why the formulation of Article III(1) differed from II(1) (i.e., the provision setting out that “All the waters of the Eastern Rivers shall be available for the unrestricted use of India, except as otherwise expressly provided in this Article.”<sup>280</sup>).<sup>281</sup>

157. In his response of 6 February 1960, Mr Iliff gave further context as to what the parties understood to be intended by the formulation in Article III(1), confirming the opinion that Mr Mueenuddin had expressed to the Secretary of the Ministry of Works, Irrigation & Power in his 15 December letter<sup>282</sup>:

“The present language achieves two results, namely:

(a) It imposes an obligation on India to let the water flow

and (b) It establishes Pakistan's entitlement to that water thereby creating an international servitude.

I am satisfied that there is no doubt and no reservation in the mind of any one, either in the Indian delegation, or the Bank, that the present language of Article III (1) and (2) imposes the treaty obligation on India to allow to flow down all the waters of the Western Rivers, except those required for the uses to be permitted under the terms of Article III (2). This has been the intention of the language and I think the language satisfies the intention.”<sup>283</sup>

158. Notwithstanding the apparent progress of the negotiations reflected in the communication of the December 1959 draft treaty to the Governments, by March 1960, it is clear that agreement was proving elusive on Western Rivers uses including storage (amongst

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<sup>279</sup> *Id.*, enclosure, lines nos. 22 and 23.

<sup>280</sup> December 1959 draft, **P-0139**, Article II(1).

<sup>281</sup> Letter from Finance Minister Shoaib to Mr Iliff, 11 January 1960, **Exhibit P-0482**.

<sup>282</sup> Letter from Mr Mueenuddin to Mr W.A. Shaikh (with enclosure), 15 December 1959, **Exhibit P-0140**, enclosure, lines 22 and 23.

<sup>283</sup> Letter from Mr Iliff to Finance Minister Shoaib, 6 February 1960, **Exhibit P-0367**, p. 2 (emphasis original). Mr Iliff later showed his letter to Mr Gulhati, and “he voiced no dissent from its terms” (Letter from Mr Iliff to Mr Mueenuddin, 2 April 1960, **Exhibit P-0240**).

other issues). The record of the negotiations shows that discussions regarding (i) Indian withdrawals for agricultural uses; (ii) Indian use of the Western Rivers for hydro-electric power generation; and (iii) Indian storage on the Western Rivers, were intimately intertwined and progress on one was not possible without progress on all.

159. By this point in time, Pakistan had evidently become concerned with the direction of negotiations, such that Pakistan's Ambassador to the United States, Ambassador Aziz Ahmed, saw fit to intervene directly. The Ambassador spoke to the President of the Bank and handed him a formal memorandum, setting out Pakistan's views, on 12 April 1960.<sup>284</sup> His memorandum set out the detail of what Pakistan termed "the situation created by an increase in Indian claims on two points far beyond what Pakistan understood these claims would be."<sup>285</sup> Namely:

"The first of the Indian claims is that withdrawals for consumptive use should be permitted upstream of Pakistan which could result in a substantial diminution of the supplies reaching Pakistan. The second Indian claim is that India be permitted to construct storages on all three of the main Western Rivers and their tributaries, involving flood-control storage on the Jhelum Main and Jhelum tributaries, general all-purpose storages on the Indus main and the tributaries of all three rivers, *and hydro-electric power storages on the Indus Main, the Chenab Main, and the tributaries of all three rivers.*"<sup>286</sup>

160. The Memorandum further emphasised that:

"[A]n important provision of the Bank Proposal was that 'so far as practicable' the plan should 'avoid control by India over waters on which Pakistan will be dependent.' The proposal contemplated that all works that could control the supplies should be on the territory under the control of the country dependent on those supplies. [...]"

After the meeting between President Black and the Government of Pakistan in May 1959, Pakistan hoped that its irrigation system would be virtually free from the possibility of sudden interference by upstream riparians. In the press release issued by the Government of Pakistan [after the meeting between President Black and the Government of Pakistan in May 1959,] [...] [i]t was pointed out that 'the plan put forward by the Bank visualizes that all the works will be built on territory under Pakistan's control, and therefore on the completion of the plan this country will secure an independent irrigation system free from the threats of interference.'

Nevertheless, Pakistan has recognised that the area in question may have needs for hydro-electric development and for flood control. Accordingly, it has agreed to meet these needs by permitting India as much power development as it desires from run-of-

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<sup>284</sup> Memorandum from Iliff to Files, 13 April 1960 (with enclosure), **Exhibit P-0483**, p. 1.

<sup>285</sup> *Id.*, enclosure: Memorandum by Ambassador Aziz Ahmed of Pakistan (Secret), 12 April 1960, p. 1.

<sup>286</sup> *Id.* (emphasis added).

the-river plants. In addition, as noted above, Pakistan is prepared to agree to 0.5 MAF of storage for irrigation. This can be used for hydro-electric power as well.

As regards flood control, Pakistan has already intimated its readiness to agree to storage for this purpose, provided the works are so designed that the storage is possible only in flood seasons and it is not possible to impound the supplies in periods when the supplies are needed lower down.

It is suggested that such proposals as the Bank puts forward with respect to storage should keep in view (a) that it is *politically essential for Pakistan's irrigation system to be as independent as possible and works that could cause interference should be minimal*; (b) that *to a large extent hydro-electric and flood control requirements in the area under Indian control can be met by works so designed as to preserve this independence.*<sup>287</sup>

161. The Bank's Office Memorandum (or file note) to which the Memorandum is attached records the Bank's reaction to the Memorandum, which was conveyed on a telephone call between Vice President Iliff and Pakistan's Ambassador. It appeared likely to the Bank that it "would be unable [...] to reconcile the positions taken by the Indian and Pakistan delegations".<sup>288</sup> In that circumstance, the Bank proposed that it should, upon the request of each Government, put forward a formula for consideration by each Government. Should either Government be unwilling to consider it, then "the Bank would reluctantly be obliged to announce that its good offices had failed to bring about agreement between the two Governments and that it was withdrawing from the dispute."<sup>289</sup>

162. Ambassador Ahmed's note of the conversation he had with Mr Black and Mr Iliff on 12 April 1960 records that "Black tried to argue that [...] it was no longer possible to abide by the original assurance that Indian consumptive uses on Western Rivers would be 'insignificant'."<sup>290</sup> The Ambassador's response was firm:

"Dealing with storages, the Ambassador explained that the principal attraction of the Bank Proposal had been its promise of independence from interference by India in the Western Rivers. He reminded Black and Iliff that in the press communique issued by Government in 1959 great stress had been laid upon this particular aspect. However, Pakistan recognized that the area involved may have needs for hydro-electric developments and for flood control, and in her desire to arrive at a settlement, Pakistan had agreed to certain types of storages. India, on the other hand, was now demanding storages on all three rivers and their tributaries. This placed the Government of Pakistan

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<sup>287</sup> *Id.*, enclosure: Memorandum by Ambassador Aziz Ahmed of Pakistan (Secret), 12 April 1960, pp. 5–6 (emphasis added).

<sup>288</sup> *Id.*, ¶ 3(c).

<sup>289</sup> *Id.*, ¶ 3(d) (Alternative B).

<sup>290</sup> Cable from Ambassador Aziz Ahmed to Finance Minister Shoaib (with enclosure [incomplete]), 14 April 1960, **Exhibit P-0484**, Annexure 'A', p. 2.

in a very awkward position, as it would be difficult for it to face the people and present them with a Treaty which did not fulfill [*sic*] the promise of 'independence' contained in their announcement last year. Black felt that Pakistan's objection to storages was based on the assumption that India would act malevolently. *The Ambassador replied that Pakistan's objection was not connected with possible malevolence, but with the Indian demand for storages which undermined the very concept of 'independence'.*"<sup>291</sup>

163. The detail of a subsequent conversation between Vice President Iliff and the Ambassador on the night of 12 April 1960 is recorded in Ambassador Ahmed's cable of 14 April 1960. Significantly, the Ambassador conveyed to Vice President Iliff that, whatever formula the Bank might put forward and whatever threats the Bank might make to withdraw its good offices, Pakistan would be very reluctant to "ignore the basic assumptions of the Bank's [1954] Proposal regarding mutual independence and Western uses".<sup>292</sup>

164. On 15 April 1960, Pakistan communicated its agreement "to the proposition put forward by the Bank" (i.e., to propose a formula to the parties for their consideration). Its message conveyed to the Bank nonetheless reiterated its "hope that in evolving the formula the Bank would inter alia keep in view factors set out in their memorandum" of 12 April 1960.<sup>293</sup>

165. The figures proposed by the parties for withdrawals and storage, which would ultimately once agreed be contained within Annexures C (Agricultural Use by India from the Western Rivers) and E (Storage of Waters by India on the Western Rivers) of the Treaty, were set out in a note by Vice President Iliff of 16 April 1960.<sup>294</sup> These figures did not address India's hydro-electric uses of the Western Rivers, which appears at that point to have been left to be dealt with by way of the detailed design, operation and construction constraints that were to be set out in Annexure D. However, the discussion on these Annexures provides important context for what was ultimately agreed in Annexure D, being the other major exception to India's "let flow" obligation in Article III(2).

166. Each party's figures (for Annexures C and E) were so far apart that the Bank felt there "was no possible hope that the Bank could bring them together by a 'good offices' technique."<sup>295</sup> The Bank proposed that the parties each put forward "revised figure[s]", and also inform the Bank whether, if the gap between them remained "beyond the Bank's capacity

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<sup>291</sup> *Id.*, Annexure 'A', p. 4.

<sup>292</sup> *Id.*, Cable, ¶ 6.

<sup>293</sup> World Bank records, Message received from Pakistan Ambassador at 12:15 pm, 15 April 1960, **Exhibit P-0485**.

<sup>294</sup> Office Memorandum from Mr Iliff to Files, 16 April 1960, **Exhibit P-0486**.

<sup>295</sup> Office Memorandum from Mr Iliff to Files, 19 April 1960, **Exhibit P-0487**, ¶ 1.

to close”, “they would each be willing that the Bank should put forward a formula for resolving the differences”.<sup>296</sup> Mr Iliff further recalled that:

“I said, however that it should be distinctly understood that if the Bank were asked to put forward a formula and did so, this would have to be on a ‘take it or leave it’ basis and that there would be no room for any further horse-trading, bargaining or negotiating. In other words, I said, either both sides would have to accept the Bank formula or there would be no Treaty, anyhow under the Bank’s auspices.”<sup>297</sup>

167. Mr Iliff’s note further recalls his subsequent individual conversations with the Representatives of each Government. As regards Mr Gulhati, India’s Representative, Mr Iliff told him that:

“(b) with regard to storage on the Western Rivers [...]:

- (i) I thought that India ought to forego any request for storage on the Main Stem of any of the three Western Rivers, except for ‘inundation’ off-channel storage on the Jhelum Main;
- (ii) *Having regard to the fact that certainly a large part of any ‘general storage’ that might be permitted to India could also be used for hydro purposes, and having regard also to the fact that India was being allowed reasonable freedom to construct run-of-river plants, I thought he ought to be very modest in any claims he might make for hydro power based on separate and specific storage.*

Mr Gulhati said he would bear the Bank’s views in mind.”<sup>298</sup>

168. As regards Mr Mueenuddin, Pakistan’s Representative, Mr Iliff told him that:

“(b) The Bank would take it very much amiss if Pakistan insisted that formal note should be taken of a Pakistan position that the amount of storage to be constructed on the Western Rivers by India for hydro purposes, or for flood control purposes, should be related to the damage that these structures might do to Pakistan if they were maliciously operated by India.”<sup>299</sup>

169. The following day, the Bank finalised a revised draft of the treaty (the “**April 1960 draft**”).<sup>300</sup> Within the following days, a set of draft annexures, including D and E, were

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<sup>296</sup> *Id.*, ¶¶ 2–3.

<sup>297</sup> *Id.*, ¶ 3.

<sup>298</sup> *Id.*, ¶ 7 (emphasis added).

<sup>299</sup> *Id.*, ¶ 8.

<sup>300</sup> April 1960 draft, **Exhibit P-0143**. See also Indus Waters Treaty 1960 (Draft of December 9, 1959): List of Amendments dated April 20, 1960, **Exhibit P-0144**; Redline of April 1960 draft as against December 1959 draft (created by Counsel for Pakistan for the purposes of this Memorial), **Exhibit P-0516**.

finalised.<sup>301</sup> The World Bank archives themselves provide no clarity as to the process by which these drafts were formulated (nor is further light shed on this by the other materials considered for the purposes of this Appendix).

170. At some point between April and June, the negotiating parties had managed to reach broad agreement on uses of the Western Rivers. Beyond that, there is a similar lack of transparency in the World Bank archives (and otherwise) as regards the process leading up to the drafts of June 1960 (namely, the June 1960 draft of the treaty<sup>302</sup> and the drafts of Annexures D and E<sup>303</sup>).

171. Each of the parties proposed a number of further amendments to the June 1960 draft of Annexure D.<sup>304</sup> None of those put forward by Pakistan are materially relevant to the provisions in dispute in this proceeding before the Court of Arbitration. On the other hand, India's proposed amendments to the June 1960 draft of Annexure D included a number that are of relevance, as further described in **Section 4C** above.<sup>305</sup>

172. By this point in time in June 1960, there were only two principal "matters still outstanding", namely: (a) the Transitional Arrangements (i.e., the implementation plan to effect the division of waters<sup>306</sup>), and (b) the "settlement of the financial questions still unsettled and arising out of the 1948 Agreement".<sup>307</sup> That month, negotiations hit an unexpected final hurdle when, at the last minute, new demands put forward by India on the Transitional Arrangements

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<sup>301</sup> April 1960 draft of Annexure D, **Exhibit P-0476**; Annexure E, Construction of Storage Works by India on the Western Rivers, draft of 23 April 1960, **Exhibit P-0489**.

<sup>302</sup> June 1960 draft, **Exhibit P-0151**. See also Redline of June 1960 draft as against April 1960 draft (created by Counsel for Pakistan for the purposes of this Memorial), **Exhibit P-0517**.

<sup>303</sup> June 1960 draft of Annexure D, **Exhibit P-0478**; Indus Waters Treaty 1960, Annexure E: Construction of Storage Works by India on the Western Rivers (Article III(4)) (Draft dated 6<sup>th</sup> June, 1960), **Exhibit P-0491**. See also Redline of June 1960 draft of Annexure D as against April 1960 draft of Annexure D (created by Counsel for Pakistan for the purposes of this Memorial), **Exhibit P-0519**.

<sup>304</sup> Indus Waters Treaty 1960, Annexure D (Draft dated 6<sup>th</sup> June, 1960), Amendments proposed by Pakistan, **Exhibit P-0380**; Indus Waters Treaty 1960, Annexure D (Draft dated 6<sup>th</sup> June, 1960), Amendments proposed by India, **Exhibit P-0379**; Indus Waters Treaty 1960, Annexure E (Draft dated 6<sup>th</sup> June, 1960), Amendments proposed by India, **Exhibit P-0493**.

<sup>305</sup> Indus Waters Treaty 1960, Annexure D (Draft dated 6<sup>th</sup> June, 1960), Amendments proposed by India, **Exhibit P-0379**.

<sup>306</sup> It was to be, in the words of the Bank's "Indus Waters Settlement Plan" of April 1960: "the largest program of its kind ever to be undertaken anywhere in the world", comprising "a gigantic system of works requiring 10 to 12 years to construct" (World Bank, "Indus Waters Settlement Plan", 18 April 1960, **Exhibit P-0277**, ¶ 7). The Bank recognised that the project was of such a magnitude that it would be "far beyond the capacity of the two countries to finance" (World Bank, "Report and Recommendations of the President to the Executive Directors on a Proposed Loan to Pakistan for the Indus Basin Project", 18 April 1960, **Exhibit P-0494**, ¶ 7).

<sup>307</sup> Bank Note, 27 June 1960, **Exhibit P-0495**; Message for Prime Minister Nehru from Mr Black, [8]th July 1960, **Exhibit P-0496**.

– an issue that the parties had been discussing since late 1959<sup>308</sup> – threatened to derail all progress reached to date. At the end of June 1960, President Black informed Mr Gulhati, India's Representative, that the proposal put forward by the Indian delegation was one “which the Bank [was] not prepared to sponsor or beat the Pakistanis over the head to accept.”<sup>309</sup>

173. Pakistan requested the Bank to put forward a proposal to both sides to resolve the deadlock, but the Bank was prepared to do so only if such a request came from both sides. As of 5 July, no such request had been made by India.<sup>310</sup> A message from the President of the Bank to the Prime Minister of India from early July 1960 implored the Prime Minister to “put forward[] [a proposal ...] which the Bank could conscientiously press Pakistan to accept.” The President observed that “[n]one of the proposals which Gulhati has so far discussed with us measures up to this criterion.”<sup>311</sup> He warned that:

“[T]he consequences of a break-down of these negotiations, no matter where the fault might lie, when so much has already been accomplished, would be an international disaster of the first magnitude.

[...]

[...] [T]he world expects that agreement is just round the corner. But I am gravely concerned that the arrangements I have been able to make with the Friendly Governments<sup>312</sup> for financing an Indus settlement may be seriously jeopardised unless there is some assurance of a Water Treaty between India and Pakistan within a matter of weeks.”<sup>313</sup>

174. In a series of meetings in London on 21 and 22 July 1960, it was agreed with the Finance

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<sup>308</sup> World Bank, Minutes of Meeting, 23 November 1959, **Exhibit P-0497**; World Bank, Minutes of Meeting (Indian representatives), 8 December 1959, **Exhibit P-0498**; World Bank, Minutes of Meeting (Indian representatives), 22 December 1959, **Exhibit P-0499**; World Bank, Minutes of Meeting (Indian representatives), 29 December 1959, **Exhibit P-0500**.

<sup>309</sup> Office Memorandum from Mr Iliff to Files, “Indus Waters”, 5 July 1960, enclosing “Notes from which Black spoke to Gulhati”, 30 June 1960, **Exhibit P-0501**, Notes, ¶ 4.

<sup>310</sup> Office Memorandum from Mr Iliff to Files, “Indus”, 5 July 1960, **Exhibit P-0502**.

<sup>311</sup> Letter from Mr Iliff to H. E. Currim Chagla, Ambassador of India to the United States, 7 July 1960, enclosing Message for Prime Minister Nehru from Mr Black, [7]th July 1960, **Exhibit P-0503**.

<sup>312</sup> The implementation plan which emerged around April 1960 required total financing of more than USD 1 billion (equivalent), while the works in Pakistan alone were to cost USD 838 million (equivalent) (World Bank, “Report and Recommendations of the President to the Executive Directors on a Proposed Loan to Pakistan for the Indus Basin Project”, 18 April 1960, **Exhibit P-0494**, ¶ 7). The project was to be financed through a combination of contributions by Pakistan, India and the Bank, and those from “friendly governments”, including the United Kingdom and the United States (World Bank Press Release No. 626, “Indus Waters”, 1 March 1959, **Exhibit P-0504**, p. 2; World Bank, “Report and Recommendations of the President to the Executive Directors on a Proposed Loan to Pakistan for the Indus Basin Project”, 18 April 1960, **Exhibit P-0494**, ¶ 9).

<sup>313</sup> Message for Prime Minister Nehru from Mr Black, [8]th July 1960, **Exhibit P-0496**, ¶¶ 5 and 7. See also Office Memorandum from Mr Iliff to Files, “Indus Waters”, 6 July 1960, **Exhibit P-0505**; Note for President Ayub from Mr Black, 7 July 1960, **Exhibit P-0506**, and President Ayub's response in Embassy of Pakistan, Washington, D.C., Message received from President Ayub for Mr Black, 11 July 1960, **Exhibit P-0507**.

Minister of Pakistan, Mr Shoaib, that the Bank would put to Pakistan the basis on which the Transitional Arrangements deadlock could be resolved. The Bank was to “put to Pakistan only what the Bank considers are the best terms obtainable from India in the circumstances; what in the Bank’s view are something that Pakistan could live with; and what the Bank would recommend for Pakistan’s acceptance, taking into consideration the general context of the Treaty settlement.”<sup>314</sup>

175. The Vice President of the Bank, Mr Iliff, made a visit to New Delhi in August 1960, in which he managed to “extract[] important concessions from India, which enable[d] [him] to make [a] transitional arrangements proposal to Pakistan which [he could] recommend to them in good conscience”.<sup>315</sup> As a result of his deft and swift intervention, the parties were able to move forward to the completion of a draft text of Annexure B (which would become H) – Transitional Arrangements – in August 1960,<sup>316</sup> on which basis both Pakistan and India were prepared to proceed.<sup>317</sup> Deadlock on the Transitional Arrangements Annexure (as well as on the settlement of financial questions arising out of the 1948 Agreement) having been resolved, the parties moved swiftly to the finalisation of the Treaty. India proposed a number of additional amendments to the draft Treaty<sup>318</sup> and Annexures C-F.<sup>319</sup>

176. On 6 September 1960, the final text of the Indus Waters Treaty was agreed, and arrangements were put in place for its signature on 19 September 1960.<sup>320</sup> The final version of the Treaty and of Annexure D made just a handful of minor changes to their June 1960 counterparts, as more fully described in **Section 4C** above.<sup>321</sup> The Treaty was signed on the same day as the IBDF Agreement, between Pakistan, Australia, Canada, Germany, New Zealand, the United Kingdom, the United States and the World Bank. The IBDF Agreement set out the nature and amounts of financial assistance to be made available to Pakistan for the “construction of a system of works part of which will accomplish the replacement of water

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<sup>314</sup> Office Memorandum from Mr Iliff to Files, “Indus Negotiations”, 25 July 1960, **Exhibit P-0508**, p. 1 (§ A).

<sup>315</sup> Message from Mr Iliff to Mr Black, 11 August 1960, **Exhibit P-0509**.

<sup>316</sup> Letter from Mr Black to Prime Minister Nehru, 5 August 1960, **Exhibit P-0510**.

<sup>317</sup> Mr Iliff, Note of Conversation with the [Indian] Prime Minister, 11 August 1960, **Exhibit P-0511**; Sir Kenelm Guinness, Note of Meeting on Transitional Arrangements, 15 August 1960, **Exhibit P-0512**; Message for Mr Black from Mr Iliff, 15 August 1960, **Exhibit P-0513**.

<sup>318</sup> Indus Waters Treaty 1960, Second List of Amendments Proposed by India, 25 August 1960, **Exhibit P-0514**.

<sup>319</sup> Annexures C-F, Second List of Amendments Proposed by India, 25 August 1960, **Exhibit P-0512**.

<sup>320</sup> Indus Waters Treaty – President’s Report and Recommendations, 6 September 1960, **Exhibit P-0153**, p. 1; World Bank, Press Release No. 650, “Indus Water Treaty Signed”, 19 September 1960, **Exhibit P-0154**.

<sup>321</sup> See Redline of Indus Waters Treaty [main body] as against June 1960 draft (created by Counsel for Pakistan for the purposes of this Memorial), **Exhibit P-0518**; Redline of Annexure D of the Indus Waters Treaty as against June 1960 draft of Annexure D (created by Counsel for Pakistan for the purposes of this Memorial), **Exhibit P-0520**.



supplies for irrigation canals in Pakistan which hitherto have been dependent on water supplies from the waters assigned by the Treaty to India.”<sup>322</sup> The “Project” funded by the IBDF Agreement, as described in Annexure D to the IBDF Agreement, entailed “releasing the whole flow of the three Eastern Rivers for irrigation developments in India”. The Indus Waters Treaty itself was incorporated into the IBDF Agreement by its inclusion as Annexure A thereto.

177. It is clear from the negotiating history of the Treaty that the final balance struck was hard-fought on all fronts. However, the constant that remained from the Bank's 1954 Proposal was the division of the Western and Eastern rivers, and the mutual independence that that assured. As explained in **Section 4** above, the overarching obligation on India to “let flow” the Western Rivers, and the concomitant right of Pakistan to “receive for unrestricted use all those waters which India is under obligation to let flow”, was the *quid pro quo* of Pakistan's (reluctant) agreement to relinquish all rights it otherwise had over the Eastern Rivers. It is hardly surprising, viewed through that prism, that the detailed parameters constraining India's ability to use the Western Rivers for the generation of hydro-electric power set out in Annexure D, in the words of Mr Iliff, “certainly tie India up very tightly”.<sup>323</sup>

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<sup>322</sup> IBDF Agreement, **PLA-0043**, Preambular paragraph 3.

<sup>323</sup> Letter from Mr Iliff to Sir Olaf Caroe, 3 March 1961, **Exhibit P-0515**.

ANNEX I – LIST OF KEY DOCUMENTS RELEVANT TO THE INTERPRETATION AND APPLICATION OF ARTICLE III AND PARAGRAPH 8, ANNEXURE D OF THE TREATY

	Date	Description	Reference(s)
<i>Original documents</i>			
1.	5 Feb 1954	Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters, 5 February 1954 (the “ <b>1954 Proposal</b> ”)	<b>Exhibit P-0130</b> <sup>324</sup>  IWT-02615 <sup>325</sup>  Annex PK-2 (Volume 4 to Pakistan’s Memorial) in the <i>Kishenganga</i> arbitration
2.	21 May 1956	International Bank for Reconstruction and Development, Aide Mémoire of 21 May 1956 (“ <b>1956 Aide Memoire</b> ”)	<b>Exhibit P-0131</b>  IWT-03923  Annex PK-4 (Volume 4 to Pakistan’s Memorial) in the <i>Kishenganga</i> arbitration  Annex IN-40 (India’s Counter-Memorial) in the <i>Kishenganga</i> arbitration
3.	13 May 1957	May 1957 Heads of Agreement	<b>Exhibit P-0362</b> , Annex  IWT-04094
4.	24 June 1957	June 1957 Heads of Agreement	<b>Exhibit P-0413</b> , Appendix IWT-04150  <b>Exhibit P-0414</b> , Appendix

<sup>324</sup> The exhibits provided are the versions of each document found in the World Bank archives, where applicable. For ease of reference, Pakistan also provides, where applicable, cross-references to the exhibit number(s) of the document on the record in *Kishenganga* arbitration (without providing those versions themselves, unless they are the only available version). In many cases, however, there are minor formatting and other typographical differences between the World Bank archives versions and the versions on the record in *Kishenganga* arbitration. Where the document does not appear within the World Bank archives, the version provided is that which was on the record in the *Kishenganga* arbitration or which has been located within Pakistan’s archives.

<sup>325</sup> References to IWT-##### are to the documents as sourced from the World Bank archives.

**Pakistan’s Memorial – Appendix A**

	<b>Date</b>	<b>Description</b>	<b>Reference(s)</b>
			IWT-04152
5.	10 Aug 1959	Preliminary Tentative Draft (Indian)	<b>Exhibit P-0132</b>  IWT-00306
6.	10 Aug 1959	Rough Draft (Pakistan)	<b>Exhibit P-0133</b>  IWT-00312
7.	15 Aug 1959	General Wheeler’s draft, “Run-of-the-River Hydro-Electric Plants”	<b>Exhibit P-0365</b> , p. 6  Source: Pakistan’s archives
8.	15 Aug 1959	Draft given by Pakistan on Hydrel formula	<b>Exhibit P-0365</b> , pp. 7–8  Source: Pakistan’s archives
9.	15 Sept 1959	Indus Waters, Heads of Agreement for an International Water Treaty: Memorandum by the Bank Representative	<b>Exhibit P-0135</b>  IWT-04914
10.	15 Sept 1959	Indus Waters, Heads of Agreement (“ <b>Heads of Agreement 1959</b> ”)	<b>Exhibit P-0136</b>  IWT-04917 and IWT-04918 (duplicate at IWT-00280), plus IWT-04932, IWT-04934 and IWT-04938 (“Annex A” and “Annex B” plus Appendices I and II to the Heads of Agreement)  Annex PK-10 (Volume 4 to Pakistan’s Memorial) in the <i>Kishenganga</i> arbitration
11.	10 Nov 1959	Indus Basin Water Treaty, draft dated 10 <sup>th</sup> November 1959 (with additions and changes suggested by the Pakistan Delegation) (secret)	<b>Exhibit P-0480</b>  Source: Pakistan’s archives

	Date	Description	Reference(s)
12.	24 Nov 1959	Indus Waters Treaty draft (for circulation within the working group only) [without Annexures] (“ <b>November 1959 draft</b> ”)	<b>Exhibit P-0137</b>  IWT-00236
13.	24 Nov 1959	World Bank – list of riders proposed by India and Pakistan respectively for inclusion in the draft treaty text dated 24 November 1959	<b>Exhibit P-0138</b>  IWT-00224  Extract produced in Annex IN-49 (to India’s Counter-Memorial) in the <i>Kishenganga</i> arbitration
14.	9 Dec 1959	Indus Waters Treaty 1960 draft of 9 December 1959 [without Annexures] (“ <b>December 1959 draft</b> ”)	<b>Exhibit P-0139</b>  IWT-00121  Annex PK-12 (Volume 4 to Pakistan’s Memorial) in the <i>Kishenganga</i> arbitration
15.	20 Apr 1960	Indus Waters Treaty 1960 draft of 20 April 1960 [without Annexures] (“ <b>April 1960 draft</b> ”)	<b>Exhibit P-0143</b>  IWT-00144  Annex PK-19 (Volume 4 to Pakistan’s Memorial) in the <i>Kishenganga</i> arbitration
16.	20 Apr 1960	Indus Waters Treaty 1960 (Draft of December 9, 1959): List of Amendments dated April 20, 1960	<b>Exhibit P-0144</b>  IWT-00199
17.	23 Apr 1960	Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers, draft of 23 April 1960 (“ <b>April 1960 draft of Annexure D</b> ”)	<b>Exhibit P-0476</b>

**Pakistan’s Memorial – Appendix A**

	<b>Date</b>	<b>Description</b>	<b>Reference(s)</b>
			IWT-00171 merged with 176, 177, 179
18.	6 June 1960	Indus Waters Treaty 1960, Annexure D: Generation of Hydro-Electric Power by India on the Western Rivers (Article III(2)(d)), draft of 6 <sup>th</sup> June 1960 (“ <b>June 1960 draft of Annexure D</b> ”)	<b>Exhibit P-0478</b>  IWT-00074
19.	8 June 1960	Indus Waters Treaty 1960, Draft of 8 <sup>th</sup> June 1960 [without Annexures] (“ <b>June 1960 draft</b> ”)	<b>Exhibit P-0151</b>  IWT-00014  Annex PK-21 (Volume 4 to Pakistan’s Memorial) in the <i>Kishenganga</i> arbitration
20.	Undated	Indus Waters Treaty 1960, Annexure D (Draft dated 6 <sup>th</sup> June, 1960), Amendments proposed by Pakistan	<b>Exhibit P-0380</b>  IWT-00041
21.	Undated	Indus Waters Treaty 1960, Annexure D (Draft dated 6 <sup>th</sup> June, 1960), Amendments proposed by India	<b>Exhibit P-0379</b>  IWT-00048
22.	Undated	Indus Waters Treaty 1960, Annexure E (Draft dated 6 <sup>th</sup> June, 1960), Amendments proposed by India	<b>Exhibit P-0493</b>  IWT-00052
23.	25 Aug 1960	Annexures C-F, Second list of amendments proposed by India	<b>Exhibit P-0152</b>  IWT-00008
<b><i>Redlines created by Counsel for Pakistan for the purposes of this Memorial</i></b>			
24.	Not applicable	Redline of April 1960 draft as against December 1959 draft	<b>Exhibit P-0516</b>
25.	Not applicable	Redline of June 1960 draft as against April 1960 draft	<b>Exhibit P-0517</b>
26.	Not applicable	Redline of Indus Waters Treaty [main body] as against June 1960 draft	<b>Exhibit P-0518</b>

**Pakistan’s Memorial – Appendix A**

	<b>Date</b>	<b>Description</b>	<b>Reference(s)</b>
27.	Not applicable	Redline of June 1960 draft of Annexure D as against April 1960 draft of Annexure D	<b>Exhibit P-0519</b>
28.	Not applicable	Redline of Annexure D of the Indus Waters Treaty as against June 1960 draft of Annexure D	<b>Exhibit P-0520</b>
29.	Not applicable	Redline of Indus Waters Treaty [main body] as against December 1959 draft	<b>Exhibit P-0521</b>
30.	Not applicable	Redline of Annexure D of the Indus Waters Treaty as against April 1960 draft of Annexure D	<b>Exhibit P-0522</b>

ANNEX II – *DRAMATIS PERSONAE* RELATING TO THE NEGOTIATING HISTORY OF THE INDUS  
WATERS TREATY

Name	Role
Ambassador Aziz Ahmed	Ambassador of Pakistan to the United States (1959-1963)
Mr Manzur Ahmad	Engineering Adviser, Office of the Chief Engineering Adviser, Indus Basin Advisory Board of Pakistan
Mr Lars Bengston	Attorney, World Bank
Dr Berber	Member of India's delegation in the negotiations
Prime Minister, subsequently Ambassador Mohammed Ali Bogra	Prime Minister of Pakistan (1953-1955) Ambassador of Pakistan to the United States (1955-1959)
Mr Eugene Black	President, World Bank
Ambassador Currim Chagla	Ambassador of India to the United States
Sir Kenelm Guinness	Civil Engineer, World Bank
Mr Niranjan Das Gulhati	Assistant to Dr Khosla in India's delegation to the Working Party (at the time, Chief of the Natural Resources Division of India's Planning Commission and Deputy Secretary to the Ministry of Natural Resources and Scientific Research) Subsequently, from November 1954, Head of India's Delegation in the negotiations Additional Secretary to the Government of India, Ministry of Irrigation and Power
Mr A. Hussain	Office of the High Commissioner for Pakistan, London
Prime Minister Liaquat Ali Khan	Prime Minister of Pakistan (1947-1951)
President Muhammad Ayub Khan	President of Pakistan (1958-1969)
Prime Minister Malik Feroz Khan Noon	Chief Minister of Punjab (1953-1956) Foreign Minister of Pakistan (1956-1957) Prime Minister of Pakistan (1957-1958)
Mr Chaudhry Zafrulla Khan	Foreign Minister of Pakistan (1947-1954)

Name	Role
Dr A. N. Khosla	Head of India's delegation to the Working Party, 1951-1954 (at the time, Prime Minister Nehru's chief engineering adviser and Additional Secretary to the Government of India, Ministry of Natural Resources and Scientific Research)
Mr David E. Lilienthal	Independent
Mr William B. Iliff	Vice President, World Bank
Mr John G. Laylin	External legal adviser to the Government of Pakistan, Partner at Covington & Burling
Mr Ghulam Mueenuddin	Head of Pakistan's delegation in the negotiations (1954-1960) Secretary to the Government of Pakistan, Ministry of Fuel, Power and Natural resources
Prime Minister Khawaja Nazimuddin	Prime Minister of Pakistan (1951-1953)
Prime Minister Jawaharlal Nehru	Prime Minister of India (1947-1964)
Mr M. S. Shaikh	Counsellor, Embassy of Pakistan in Washington D.C.
Mr W. A. Sheikh	Secretary to the Government of Pakistan, Ministry of Works, Irrigation and Power
Mr M. Shoaib	Executive Director of the World Bank for Pakistan, Iran, Ethiopia and other Middle Eastern countries (1952-1963) Minister of Finance, Government of Pakistan (1958 to 1966)
Mr Davidson Sommers	Vice President and General Counsel, Office of the President of the World Bank (1956 to 1960)
General Raymond Albert Wheeler	Head of the World Bank's delegation to the Working Party Leader of the World Bank's group of technical experts

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# **APPENDIX B**

**STATEMENT OF SYED MUHAMMAD  
MEHAR ALI SHAH**

**PCA Case No. 2023-01**

**IN THE MATTER OF AN ARBITRATION**

**-before-**

**THE COURT OF ARBITRATION CONSTITUTED  
IN ACCORDANCE WITH THE INDUS WATERS TREATY 1960**

**-between-**

**THE ISLAMIC REPUBLIC OF PAKISTAN**

**-and-**

**THE REPUBLIC OF INDIA**

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**STATEMENT OF  
SYED MUHAMMAD MEHAR ALI SHAH**

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I, Syed Muhammad Mehar Ali Shah, state as follows:

## I. INTRODUCTION

1. I am the Pakistan Commissioner for Indus Waters (“**PCIW**” or Pakistan’s “**Commissioner**”) appointed under Article VIII (1) of the Indus Waters Treaty 1960 (the “**Treaty**”). I was appointed by Pakistan on 9 February 2018. Article VIII (1) of the Treaty provides that, unless issues concerning the Treaty are taken up on a Government-to-Government basis, the respective Commissioners appointed by Pakistan and India (together, the “**Parties**”) will be the representatives of their respective Governments and serve as the “regular channel of communication” for all matters arising out of the Treaty and relating to its implementation.
2. The Parties’ Commissioners are intended to be persons of high technical engineering expertise, rather than government officials, lawyers, or diplomats. Article VIII (1) provides that persons appointed to the post of Commissioner “should ordinarily be a high-ranking engineer competent in the field of hydrology and water-use.” This is my background. From 2005 to the present, I have amassed nearly 20 years of experience of working within the framework of the Treaty.
3. I qualified as a water resources engineer in 2004, obtaining a Masters in Water Resources Engineering from the University of Engineering and Technology, Lahore, Pakistan. The courses I studied during my Bachelor and Masters Degrees *inter alia* included: Applied Hydrology; Groundwater Hydrology; Irrigation Engineering; Dam Engineering; Hydraulic Structures; Sedimentation; Open Channel Hydraulics and Advanced Open Channel Hydraulics; Fluid Mechanics; and Hydraulic Machines (Pumps and Turbines). After I qualified, I worked as hydraulic / hydrologic / sedimentation modeller in the Water and Agriculture Division of the National Engineering Services Pakistan (Pvt.) Limited (“**NESPAK**”).<sup>1</sup> I started my employment with NESPAK in 2004 as a Junior Engineer in the Hydrology Section of the Water and Agriculture Division. I was promoted through various grades before becoming a Principal Engineer in 2010, when I was assigned to lead the Modelling and Transboundary Waters Section. Within the Modelling and Transboundary Waters Section, I was responsible for leading a team of

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<sup>1</sup> NESPAK is a State-owned enterprise which provides engineering consultancy services both in Pakistan and internationally (see <https://www.nespak.com.pk/>).

water resources engineers and other professionals carrying out, among other things, technical reviews of the designs of hydropower projects in the Indus basin which India had submitted to the Government of Pakistan.

4. My other responsibilities included carrying out: hydrological studies to ascertain water availability for irrigation and hydropower uses in the long-term; reservoir operation studies to estimate the shortages and surpluses for the given irrigation and hydropower projects in the long-term; flood studies to estimate the design flood for the new projects; and the development of a Flood Early Warning System for the Indus system of rivers.<sup>2</sup> I also worked extensively on simulating long-term sedimentation patterns in reservoirs and rivers, and evaluating the potential of sediment evacuation by creating hydraulic conditions conducive for sluicing of incoming sediments and flushing of deposited sediments from the reservoirs by testing various scenarios of reservoir operation, for projects in the Indus basin. This also involved assessing the potential of damage to the turbines due to sedimentation and identifying suitable sediment management measures.
5. My major international assignments included working (intermittently, between 2007 and 2013) as a surface water modeller on the Alborz Integrated Soil and Water Conservation Project, in Mazandaran province of Iran. This assignment involved, for example, the assessment of water availability and carrying out reservoir operation simulations, the estimation of crop water requirements, and the formulation of scenarios to identify the most appropriate cropping pattern (so as to avoid excessive water shortages or, on the other hand, waterlogging) for development of new agricultural land. My professional experience, set out in this and the paragraphs above, has been of direct assistance to me in my role as PCIW.
6. I make this Statement in the context of the proceedings between Pakistan and India currently before the Court of Arbitration (the “**Court**”). This Statement is in part **a statement of expert opinion**, describing the relevant, or potentially relevant, parts of the Treaty as a complex instrument; and in part **a witness statement of fact**, addressing the gap between what was intended by the Treaty, on its face, and how the Treaty has been

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<sup>2</sup> The development of a Flood Early Warning System involved developing a rainfall-runoff model of the upper watersheds of tributaries of the Indus, followed by river-flow models to route the estimated/observed flood hydrographs through the rivers flowing in the plains. This facilitated the forecasting of flood magnitudes at various locations along the river system, and the associated inundation patterns within the floodplains.

implemented in practice.

7. This Statement, of both expert opinion and of fact, reflects my views and, save where the contrary is indicated, the facts that I address are within my own knowledge. Where they are not within my own knowledge, they are correct to the best of my knowledge and belief. Although I have had the assistance of counsel to Pakistan in the preparation of this Statement—the preparation of this Statement having taken the form of a series of detailed oral statements given by me on the basis of which this Statement was prepared—I have carefully reviewed the content of this Statement and affirm that it reflects my views and is accurate to the best of my knowledge and belief.
8. After this Introduction, this Statement proceeds under the following headings:
  - 8.1. Overview of the Indus Basin and the Treaty (**Section II**);
  - 8.2. Co-operation and transparency (**Section III**);
  - 8.3. The importance of information-sharing (**Section IV**);
  - 8.4. The division of the waters of the Eastern and Western Rivers, and the framework for hydro-electric power on the Western Rivers (**Section V**);
  - 8.5. Information-sharing in relation to planned works (**Section VI**);
  - 8.6. India's frustration of the Treaty provisions (**Section VII**); and
  - 8.7. Concluding observations (**Section VIII**).
9. **Sections II to VI** express my **expert opinion** on the Treaty and key provisions that may be relevant to these proceedings. **Sections VII to VIII** are **statements of fact** addressing how the Treaty is working in practice. Where the text of the passages is emboldened, this has been added to emphasise a particular part of the text. This emphasis is my own and does not exist in the Treaty. References in my Statement to “Pakistan”, “India”, or any other geographic description or designation, should be considered against the backdrop of, and in accordance with, Article XI (1) of the Treaty.

## II. OVERVIEW OF THE INDUS BASIN AND THE TREATY

10. The Treaty is concerned with the waters of the Indus system of rivers which flow through Pakistan and India. The Treaty identifies six rivers that make up the “Indus system of rivers” in the Indus basin (namely, the Indus, the Jhelum, the Chenab, the Ravi, the Beas and the Sutlej).
11. The Treaty divides these rivers into two groups:
  - 11.1. The **Eastern Rivers** (as defined in Article I (5)), being the Ravi, the Beas and the Sutlej; and
  - 11.2. The **Western Rivers** (as defined in Article I (6)), being the Indus, the Jhelum and the Chenab.
12. Under Article I (3), reference to these various rivers includes reference to “the named river (including Connected Lakes, if any) and all its Tributaries”, subject to some limited exceptions or clarifications which are not important for present purposes.
13. The Treaty, as set out in Article XII (1), is made up of “the Preamble, the Articles hereof and Annexures A to H hereto”.

### 13.1. The twelve Articles are:

Article I	Definitions
Article II	Provisions regarding Eastern Rivers
Article III	Provisions regarding Western Rivers
Article IV	Provisions regarding Eastern Rivers and Western Rivers
Article V	Financial Provisions
Article VI	Exchange of data
Article VII	Future co-operation
Article VIII	Permanent Indus Commission
Article IX	Settlement of differences and disputes
Article X	Emergency Provision
Article XI	General Provisions
Article XII	Final Provisions

### 13.2. The Annexures A-H are:

Annexure A	Exchange of notes between Government of India and Government of Pakistan
Annexure B	Agricultural use by Pakistan from certain tributaries of the Ravi ( <i>Article II (3)</i> )

Annexure C	Agricultural use by India from the Western Rivers ( <i>Article III (2)(c)</i> )
Annexure D	Generation of hydro-electric power by India on the Western Rivers ( <i>Article III (2)(d)</i> )
Annexure E	Storage of waters by India on the Western Rivers ( <i>Article III (4)</i> )
Annexure F	Neutral Expert ( <i>Article IX (2)</i> )
Annexure G	Court of Arbitration ( <i>Article IX (5)</i> )
Annexure H	Transitional arrangements ( <i>Article II (5)</i> )

14. In this statement, I address:

14.1. the Treaty as a whole – focusing on the requirements of co-operation and information-sharing;

14.2. those provisions of the Treaty which are most relevant to the design, operation and construction of new Run-of-River Plants on the Western Rivers; and

14.3. provisions of the Treaty which are not being properly implemented by India.

### III. CO-OPERATION AND TRANSPARENCY

15. The Treaty entered into force on 12 January 1961, with retroactive effect from 1 April 1960 (according to Article XII (2)). 1 April 1960 is defined in Article I (16), with reference to Article XII, as the “Effective Date”. Article XII (3) and (4) make clear that the provisions of the Treaty may only be modified or terminated by another ratified treaty between Pakistan and India.

16. The Preamble to the Treaty states, with my emphasis added:

“The Government of India and the Government of Pakistan, being equally desirous of attaining the most complete and satisfactory utilisation of the waters of the Indus system of rivers and recognising the need, therefore, of **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** and of **making provision for the settlement, in a cooperative spirit,** of all such questions as may hereafter arise in regard to the interpretation or application of the provisions agreed upon herein, have resolved to conclude a Treaty in furtherance of these objectives [...]”

17. A central operating principle of the Treaty is the “cooperative spirit” between Pakistan and India. Article VIII, entitled the **Permanent Indus Commission** (“**Commission**”), is an important starting point in relation to co-operation. Articles VIII (1) and (3)

introduce it in the following terms:

17.1. Article VIII (1) explains:

“India and Pakistan shall each create a permanent post of Commissioner for Indus Waters, and shall appoint to this post, as often as a vacancy occurs, a person who should ordinarily be a high-ranking engineer competent in the field of hydrology and water-use. [...] each Commissioner will be the representative of his Government for all matters arising out of this Treaty, and will serve as the regular channel of communication on all matters relating to the implementation of the Treaty [...]”

17.2. Article VIII (3) provides that the “two Commissioners shall together form the Permanent Indus Commission.”

18. The Commission was intended to be the principal forum for the resolution of questions arising in relation to the implementation of the Treaty. This is apparent from two aspects of Article VIII (1):

18.1. **First**, each Commissioner is required to possess an appropriate technical background in the form of specific expertise in **both** hydrology and water use (as opposed to general expertise in a broad engineering discipline like civil or mechanical or electrical engineering, for example).

18.2. **Second**, the Treaty provides that the Commissioners would represent their respective Governments as a channel of regular communication. The Commissioners were intended to be in a position to resolve any questions, or in case resolution is not achieved and the outstanding question becomes a difference or a dispute, to take steps for the resolution of such differences or disputes through one of the mechanisms laid down in Article IX.

19. This can also be seen from Article IX itself. Article IX (1) and (2) provide, respectively:

“Any question which arises between the Parties concerning the interpretation or application of this Treaty or the existence of any fact which, if established, might constitute a breach of this Treaty **shall first be examined by the Commission, which will endeavour to resolve the question by agreement.**”

and



“If the Commission does not reach agreement on any of the questions mentioned in Paragraph (1), then a difference will be deemed to have arisen [...]”.

20. The next seven paragraphs of Article VIII (from (4) to (10)) address, in broad terms:

- the purpose and functions of the Commission, including to establish and maintain co-operative arrangements for the implementation of the Treaty, and to facilitate General and Special Tours of Inspection;
- the obligation to meet “regularly”, at least once every year, and also when requested by either Commissioner;
- the privileges and immunities of the Commissioners to safeguard the independent exercise of their functions in connection with the Commission;
- the number of persons accompanying the Commissioner while conducting a Tour of Inspection;
- the requirement that the Commission prepare a report on its work for the year ending 31 March, and submit it to the two Governments before the following 1 June every year;
- that the expenses of each Commissioner be borne by each respective Government; and
- that the Commission shall determine its own procedures.

21. Article VIII (4) sets out the key responsibilities of the Commission as follows:

“The purpose and functions of the Commission shall be to establish and maintain **co-operative arrangements for the implementation of this Treaty**, to **promote cooperation** between the Parties in the development of the waters of the Rivers [...]”.

22. In the paragraphs that follow, the Treaty lists certain ways in which that co-operation should be promoted. Sub-paragraph (e) is concerned with the Transition Period, which has long since expired. The other four sub-paragraphs provide:

- 22.1. for the preparation of a joint report on “any problem relating to the development of the waters of the Rivers” (sub-paragraph (a));

- 22.2. that “every effort [should be made] to settle **promptly**, in accordance with the provisions of Article IX (1) any question arising thereunder” (sub-paragraph (b));
- 22.3. for the undertaking of a general tour of inspection of the Rivers every five years (sub-paragraph (c)); and
- 22.4. for the “undertaking **promptly**” of a tour of inspection of works or sites on the Rivers, at the request of one of the Commissioners (sub-paragraph (d)).
23. Article VII records the Parties’ intentions as to future co-operation. The first part of Article VII (1) states:
- “The two Parties recognize that they have a common interest in the optimum development of the Rivers, and, to that end, **they declare their intention to co-operate**, by mutual agreement, to the fullest possible extent.”
24. The “intention to co-operate” referred to in Article VII (1) is equally applicable to both Parties. However, in applying this provision, it is important to take into account the different character of India and Pakistan as (respectively) upper and lower riparians. In most circumstances, successful implementation of the Treaty can only be achieved by action taken (or not taken) by the upper riparian – India.
25. The nature of the co-operation required is set out in the sub-paragraphs that follow Article VII (1), as set out below:
- 25.1. Sub-paragraph (a)—which I discuss further in paragraph 28 below—is concerned with the steps that were anticipated as potentially required to build the infrastructure which would facilitate data sharing between the Parties.
- 25.2. Sub-paragraph (b) addresses new drainage works (“[...] to the extent [each Party] considers practicable and on agreement by the other Party to pay the costs to be incurred, [each Party] will, at the request of the other Party, carry out such new drainage works as may be required in connection with new drainage works of the other Party”).
- 25.3. Sub-paragraph (c) states the Parties’ intention to co-operate by mutual agreement with a view to achieving “the optimum development of the Rivers” extends to co-operation “in undertaking engineering works on the Rivers”. This is very broad in

scope.

26. Article IX addresses the settlement of differences and disputes. The Court will already be very familiar with this part of the Treaty and, accordingly, I do not address it further.

#### IV. THE IMPORTANCE OF INFORMATION-SHARING

27. The requirement to cooperate is important in relation to information sharing. Both Parties are under obligations to share information. The success of the Treaty is based on the sharing of information and data between the Parties.

28. The importance of this is illustrated by Article VII (1)(a).

28.1. Sub-paragraph (a) provides that:

“Each Party, to the extent it considers practicable and on agreement by the other Party to pay the costs to be incurred, will, at the request of the other Party, **set up or install such hydrologic observation stations** within the drainage basins of the Rivers, and set up or install such meteorological observation stations relating thereto and carry out such observations thereat, **as may be requested, and will supply the data so obtained**”.

- 28.2. This provision recognises that hydrological observation is important – and, even if it comes at a cost, those steps must be taken if paid for by the requesting Party. The Treaty recognises both the importance of data, and the need to ensure that any observation stations required, but not already in operation, would be installed.

29. There are other examples of these types of obligations in the Treaty:

- 29.1. Article VI (1), which reads: “The following data with respect to the flow in, and utilisation of the waters of, the Rivers **shall be exchanged regularly** between the Parties [...]”. The final paragraph of Article VI (1) provides that the data “with respect to the flow in, and utilisation of the waters of, the Rivers” “shall be transmitted monthly by each Party to the other as soon as the data for a calendar month have been collected and tabulated”. But it also provides that “such of the data specified above as are **considered by either Party to be necessary for operational purposes shall be supplied daily or at less frequent intervals, as may be requested**”.

29.2. There are five categories of daily data which both Parties are required to transmit at least monthly (in Article VI (1)(a)-(e)). This information is important because it enables:

- a better understanding of the hydrology of the Rivers and enables ascertainment of the natural pattern of flows and alterations to the same (which can only be understood through frequent, periodic and timely observations);
- monitoring of any significant extractions of water from the River flows and understanding the extent of any alterations to flow as a result of interventions; and
- the Parties to make a comparison in order to determine whether or not there has been any significant change in terms of the water usage.

The Treaty also makes provision for transmission of this data more frequently than at monthly intervals. Where one Party considers “such of the data specified above” to be “necessary for operational purposes”, that data “**shall be supplied daily or at less frequent intervals**, as may be requested” (under the final paragraph of Article VI (1)).

29.3. I note that the Treaty made provision for circumstances where one Party considered it necessary for information to be supplied more swiftly than might have been usual at the time the Treaty was concluded, via “telegram, telephone, or wireless”. Article VI (1) provides that, in such cases, the requesting Party “shall reimburse the other Party for the cost of transmission.” This conveys the principle that if the data requested is something very important and time sensitive, the cost of compliance cannot be given as a reason for not supplying the information quickly.

29.4. Article VI (2) also enables a Party to request further data about the hydrology of any of the Rivers, or to canal or reservoir operations connected with the Rivers. This enable requests to be made for certain data, such as snow and rainfall data, which constitutes “any data relating to the hydrology of the River” but which is not expressly addressed in Article VI(1). If one of the Commissioners considers it important to ascertain a certain fact or a certain effect, that Commissioner can make

that request to his counterpart who is thereafter under an obligation to supply that data, if it is available.

29.5. Under Article II (3), Pakistan is permitted, as one of the exceptions to its obligation to let flow the waters and the prohibition against interference with the waters of the Eastern Rivers, to use the waters for Agricultural Use “as specified in Annexure B”. Paragraphs 5 and 6 of Annexure B set out certain information which Pakistan must provide to India in relation to such use. Pakistan has ensured that this information has been provided as required since 1960. To the best of my knowledge, I am not aware of any year where this information has not been shared.

29.6. Article IV (8) places an obligation of communication on both India and Pakistan in relation to the provision of information about floods as far in advance as practicable. The first part of the paragraph records that:

“The use of the natural channels of the Rivers for the discharge of flood or other excess waters shall be free and not subject to limitation by either Party, and neither Party shall have any claim against the other in respect of any damage caused by such use.”

29.7. The second part of the paragraph states, however, that “Each Party agrees to communicate to the other Party, as far in advance as practicable, **any information it may have** in regard to **such extraordinary discharges** of water from reservoirs and flood flows **as may affect the other Party.**” I discuss this provision further in paragraph 87 below.

30. The Treaty also establishes extensive information-sharing obligations in relation to India’s use of the Western Rivers for hydroelectric power generation. I discuss these further at **Section VI** below.

## **V. THE DIVISION OF THE WATERS OF THE EASTERN AND WESTERN RIVERS, AND THE FRAMEWORK FOR HYDRO-ELECTRIC POWER ON THE WESTERN RIVERS**

31. Articles II to IV of the Treaty (together with their associated Annexures) set out the provisions regarding the Eastern and Western Rivers and how the waters of each can be used by the Parties. The Treaty addresses them in two separate Articles II and III—

setting out the rights and obligations of each Party. Article IV sets out provisions regarding both Rivers. As I stated in my first Commission meeting as PCIW:

“The Treaty embodies a fundamental choice by the Parties that clarity was to be preferred over flexibility, precisely because it was thought that clarity would minimize the possibility of conflict and thereby allow the most ‘complete and satisfactory “utilization”[’] [*sic*] of the Indus System of Rivers.”<sup>3</sup>

32. The first four paragraphs of Article II define the perpetual arrangements in place for the Eastern Rivers.

32.1. Under Article II India is given the right to use the waters of the Eastern Rivers and Pakistan is under a “let flow” obligation and subject to a prohibition against interference (as defined in Article I (15), which I describe at paragraph 34 below). This is subject to defined exceptions, which benefit Pakistan.

32.2. Article II (1) states “All the waters of the Eastern Rivers shall be available for the unrestricted use of India, except as otherwise expressly provided in this Article” and notes (at Articles II (2) and (3)) that Pakistan “shall be under an obligation to let flow, and shall not permit any interference with” certain defined waters before those waters “have finally crossed into Pakistan”.

32.3. These provisions reflect that the natural course of the Eastern Rivers crossed between Pakistan and India until they eventually entered into Pakistan, as the downstream riparian. However, Articles II (2) and (3) recognise that Pakistan’s obligation to let the waters flow, and not to permit interference, is subject to an exception for Domestic Use, Non-Consumptive Use and Agricultural Use.<sup>4</sup>

32.4. Article II (4) explains, however, that when the waters of the Eastern Rivers finally cross and remain within the territory of Pakistan, Pakistan is then permitted unrestricted use.

32.5. Pakistan has always honoured its obligations in Article II. There has never been

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<sup>3</sup> Record of the 114<sup>th</sup> Meeting of the Permanent Indus Commission, 29-30 March 2018, dated 31 March 2018, **Exhibit P-0180**, ¶ 8.

<sup>4</sup> As I mentioned above, Article II needs to be read together with Annexure B, which specifies Pakistan’s permission to use the waters from certain Tributaries of the Ravi for Agricultural Use, by reference to the maximum permitted acres of irrigated or cultivated land.

an allegation by India that Pakistan has in any way acted in violation of Article II.

33. In a similar way, the rights and obligations of both Pakistan and India in relation to the Western Rivers have been defined in detail in Article III and the same treatment has been given.

33.1. Under Article III, Pakistan is entitled to use the waters of the Western Rivers (“Pakistan shall receive for unrestricted use [...]”) and India is under an obligation to “let flow” and subject to a prohibition against interference (as defined in Article I (15), which I describe at paragraph 34 below). This prohibition is expressly subject to narrow exceptions for India’s benefit.

33.2. The exceptions defined in Article III (2) are two-fold: (1) India’s obligation to “let flow” is subject to an exception for certain uses, but those uses are restricted to the “drainage basin”—that is, respective catchment areas of each of the Western Rivers; and (2) the exceptions are restricted to the four uses as set out in the Treaty.

33.3. The terms used in Article III (2)—and in particular the phrase “shall not permit” is important. This means that it is India’s obligation to make sure that it protects the unrestricted flow of all waters of the Western Rivers to Pakistan.

33.4. Article III (4) states: “Except as provided in Annexures D and E, India shall not store any water of, or construct any storage works on, the Western Rivers.” I address the main features of these Annexures in paragraphs 36–43 below.

34. A common feature of Articles II and III is that both refer to the concept of “interference with the waters” of the Rivers. This phrase is defined at Article I (15) of the Treaty, as:

“(a) Any **act of withdrawal** therefrom; or

(b) **Any man-made obstruction to their flow which causes a change in the volume (within the practical range of measurement) of the daily flow of the waters:** Provided however that an obstruction which involves only an insignificant and incidental change in the volume of the daily flow, for example, fluctuations due to afflux caused by bridge piers or a temporary by-pass, etc., shall not be deemed to be an interference with the waters.”

35. Other terms used throughout Articles II and III that are defined in Article I of the Treaty include the terms “Agricultural Use” (Article I (9)), “Domestic Use” (Article I (10)) and “Non-Consumptive Use” (Article I (11)). Of these, the most important to note is that the

term “Non-Consumptive Use” is defined as “any control or use of water” for various (specified) reasons, but “the term does not include Agricultural Use or use for the generation of hydro-electric power” (Article I (11)).

36. Annexures D and E, which are referred to in Article III, are of critical importance. Annexure D is titled, “Generation of Hydro-electric Power by India on the Western Rivers”. Annexure E is titled, “Storage of Waters by India on the Western Rivers”. The scope of each Annexure is defined in Paragraph 1 of each:

36.1. Paragraph 1 of Annexure D provides that:

“The provisions of this Annexure shall apply with respect to the use by India of the waters of the Western Rivers for the generation of hydro-electric power under the provisions of Article III (2) and, **subject to the provisions of this Annexure**, such use shall be unrestricted: Provided that the design, construction and operation of new hydro-electric plants which are incorporated in a Storage Work (as defined in Annexure E) shall be governed by the relevant provisions of Annexure E.”

36.2. Paragraph 1 of Annexure E states that:

“The provisions of this Annexure shall apply with respect to the storage of water on the Western Rivers, and to the construction and operation of Storage Works thereon, by India under the provisions of Article III (4).”

37. Annexures D and E each follow a similar structure, defining key terms that are used, addressing plants that were in operation or under construction in 1960, design criteria for new plants, exchange of design information, and operational constraints.

38. Looking at Annexure D, it addresses four categories of Run-of-River Plant:

38.1. hydro-electric plants in operation, or under construction, as on the Effective Date (Part 2, which also addresses the circumstances in which India wishes to make an alteration to the design of any of these plants);

38.2. new Run-of-River Plants (Part 3);

38.3. Small Plants, which are a subset of new Run-of-River Plants (as defined under Paragraph 18 of Annexure D); and

38.4. new Plants on irrigation channels (Part 4, which is not relevant for present purposes).



39. Most relevant for present purposes is Part 3, which lays down restrictions on the design, construction and operation of new Run-of-River Plants (other than Small Plants addressed in Paragraph 18 of Annexure D). Paragraph 8 provides mandatory **design criteria**, regulating such technical features of Run-of-River Plants as the allowable “Pondage” in the “Operating Pool”, the location of “outlets”, the permissibility and (if so) location of gated spillways, and the location of intakes. The Court will be very familiar with the provisions of Paragraph 8 of Annexure D from Pakistan’s Memorial—accordingly, I do not address them here.
40. The purpose of the Paragraph 8 criteria restrictions is to uphold India’s obligation to “let flow” the waters of the Western Rivers and to minimise India’s control over them.
41. **Information-sharing** lies at the heart of Annexure D in relation to each of the categories of Plant I have set out above, as I further discuss in **Section VI** below (see Paragraphs 5, 6, 9, 12, 13, 19, 22, and 25 of Annexure D, in particular). This is critical to ensure that Pakistan is able to check that the design of India’s proposed Run-of-River Plants meets the applicable requirements and, if necessary, to object to such design.
42. Paragraphs 15, together with 16 and 17, are also important, as they set out requirements for India’s **operation** of new Run-of-River Plants. Those requirements relate to the timing and volume of delivery of water received by such a Plant to the river below the Plant as well as their relative position on the Western Rivers with respect to the vicinity to the points of entry of these rivers into Pakistan.
43. Annexure E arises out of Article III (4) of the Treaty (which states 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”). This Annexure sets out India’s obligations when it comes to the development of works which might be capable of storing the waters of the Western Rivers.
44. Article IV contains provisions specific to both the Eastern and Western Rivers. Article IV is lengthy, containing 15 sub-paragraphs. Those provisions address a range of issues, including the Transition Period; the action required to be taken to avoid material damage being caused by the actions of one Party to the other; and the consequences of either Party “develop[ing] a use of the waters [...] which is not in accordance [...] with the Treaty”, at Article IV (14):

“In the event that either Party should develop a use of the waters of the Rivers which is not in accordance with the provisions of this Treaty, **that Party shall not acquire by reason of such use any right, by prescription or otherwise, to a continuance of such use.**”

45. This provision is equally applicable to both Parties, but for practical reasons (because Pakistan is the lower riparian) the stakes are higher for Pakistan than for India.

## VI. INFORMATION-SHARING IN RELATION TO PLANNED WORKS

46. The sharing of information is an important aspect of co-operation under the Treaty. Given the status of Pakistan as the lower riparian to India (the upper riparian), Pakistan cannot satisfy itself as to whether or not the Treaty is being implemented in its true letter and spirit, in the absence of information provided by India. The success of this Treaty is fundamentally linked to the sharing of information and data between the Parties. In addition, India is under a number of specific information-sharing obligations in relation to its use of the Western Rivers for hydroelectric power generation, as I set out in this Section.

### A. Information-sharing in the event of planned “interference with the waters”

47. Before discussing the specific information-sharing provisions under Annexure D, it is useful first to touch upon the steps required under the Treaty before construction work commences for a new plant.
48. Article I (15) defines “interference with the waters” to mean any act of withdrawal of water or any man-made obstruction to the flow of water which causes a change in the volume of the daily flow of water which is other than insignificant and incidental.
49. Against this background, Article VII (2), first sentence provides:

“If either Party **plans to construct any engineering work which would cause interference with the waters of any of the Rivers** and which, in its opinion, would affect the other Party materially, **it shall notify the other Party of its plans and shall supply such data relating to the work as may be available and as would enable the other Party to inform itself of the nature, magnitude and effect of the work.**”

50. This reiterates that, at the planning stage, if one Party considers that it is going to carry out certain engineering work which it considers may cause some alteration in the flow,

it must voluntarily share the details with the other Party. This enables the other Party to be informed of the “nature, magnitude and effect of the work”.

51. Article VII (2), second sentence continues, however, by stating that:

**“If a 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, nevertheless, the Party planning the work shall, on request, supply the other Party with such data regarding the nature, magnitude, and effect, if any of the work as may be available.”**

52. As these provisions show, where India is planning any engineering works on the Western Rivers that would “cause interference with the waters”, the Treaty requires that India is transparent with Pakistan in the provision of information regarding those plans. The only constraints on the data which must be provided to Pakistan in such cases under Article VII (2) are that the data is “available” and that it would enable Pakistan to assess the “nature, magnitude and effect of the work”.

53. In the following sub-sections, I set out in more detail the information-sharing provisions of Annexure D including, most critically for present purposes, the obligation set out in Paragraph 9 of Annexure D.

**B. Information-sharing under Paragraphs 5 and 6 of Annexure D (hydro-electric plants in operation, or under construction, as on the Effective Date)**

54. Paragraphs 3 and 4 of Annexure D embody the principle that India may continue to operate, or complete and operate (as the case may be), those hydro-electric Plants in operation, or under construction, as on the Effective Date. The specific Plants concerned and their corresponding hydroelectric generation capacity, are listed in those Paragraphs. However, if India proposes to make a design alteration that “would result in a material change” (Paragraph 6(a)), such an alteration brings the Plant within the Treaty regime and Pakistan may (if the facts justify it) object (Paragraph 7).

55. India is required to provide information to Pakistan if there are any alterations or repairs undertaken to these plants which result in a “material change” or (in the case of alterations made necessary by an emergency, a “change”) (Paragraphs 6(a) and 6(b)). Paragraph 7 of Annexure D thereafter provides that Pakistan is to communicate any objections to India in relation to the changes identified by India if it considered “that the

change involves a material departure from the criteria set out in Paragraph 8 or 18 of this Annexure or Paragraph 11 of Annexure E as the case may be.”

56. Paragraph 25 also provides that even where “the change referred to in Paragraph 6 (a) [...] is not material, India shall communicate particulars of the change to Pakistan, in writing, as soon as the alteration has been made or the repairs have been undertaken. The provisions of Paragraph 7 [...] shall then apply.”

57. In other words:

57.1. India was and still is under an obligation to share information, and it cannot exercise its own discretion or subjectivity in deciding not to share information; and

57.2. if India were to change its existing and planned infrastructure, the limitations imposed on Run-of-River Plants and Storage Works under Annexures D and E would apply, irrespective of the cause of the alteration.

**C. Information-sharing under Paragraphs 9, 12 and 13 of Annexure D (new Run-of-River Plants)**

58. As I mentioned in **Section V** above, Part 3 is the most relevant part of Annexure D for present purposes, and more generally in the context of the various disputes which have arisen between India and Pakistan under the Treaty over the last two decades. In addition to laying down restrictions on the design, operation, and construction of new Run-of-River Plants, Part 3 of Annexure D also sets out India’s obligations to provide data to Pakistan in relation to its designs of such plants, with reference to Appendix II and III to Annexure D.

59. India’s obligation to share information about the design of a new Run-of-River Plant is made clear at Paragraph 9 of Annexure D, which states:

**“To enable Pakistan to satisfy itself that the design of a Plant conforms to the criteria mentioned in Paragraph 8, India shall, at least six months in advance of the beginning of construction of river works connected with the Plant, communicate to Pakistan in writing the information specified in Appendix II to this Annexure. [...]”**

60. The terms of this Paragraph are significant. The Treaty provides a mechanism to enable Pakistan to satisfy itself as to whether or not the design of a new Run-of-River

hydroelectric plant is in conformity with the criteria mentioned in Paragraph 8 of Annexure D.

61. Moreover, the use of the phrase “at least” before the words “six months in advance of the beginning of construction of river works” is also important. The earlier the information is supplied, the greater the chance for India to respond to any objections from Pakistan by reconsidering and modifying its designs, before construction contracts are awarded and modifications in the design are less challenging to implement.
62. Appendix II identifies the information which India must provide to Pakistan under Paragraph 9. That information is divided into five headings: location of plant; hydrologic data (this is not part of the data required under Appendix I, for existing or under construction plants); hydraulic data; particulars of design; and general (this includes an estimate of the effect of the proposed development on the flow pattern below the last plant downstream (with details of estimation), and the probable date of completion of the river works, as well as the dates on which various stages of the Plant would come into operation).
63. Paragraphs 12 (alterations) and 13 (emergencies) also impose on India a continuing obligation to provide further information to Pakistan where:
  - 63.1. “any alteration proposed in the design of a Plant **before** it comes into operation would result in a material change in the information furnished to Pakistan under the provisions of Paragraph 9 [...]” (Paragraph 12(a));
  - 63.2. “any alteration proposed in the design of a Plant **after** it comes into operation would result in a material change in the information furnished to Pakistan under the provisions of Paragraph 9 [...]” (Paragraph 12(b)); and
  - 63.3. if emergency repairs or alterations “result in a change in the information furnished to Pakistan under the provisions of Paragraph 9 [...]” (Paragraph 13).
64. Paragraph 25 provides that even where “the change referred to in Paragraph[] [...] 12 is not material, India shall communicate particulars of the change to Pakistan, in writing, as soon as the alteration has been made or the repairs have been undertaken. [...]”
65. Under Paragraph 10 of Annexure D, Pakistan has three months to identify and

communicate any objections which it might have in relation to the information received from India under Paragraphs 9 or 13. If Pakistan has any objection to any alteration proposed and communicated to Pakistan in accordance with Paragraph 12, Paragraph 10 also applies, but the timeframe for Pakistan's response is reduced from three to two months (by Paragraph 12). In essence, following receipt by Pakistan of the information specified in those Paragraphs 9, 12 or 13:

“[...] Pakistan shall communicate to India, in writing, any objection that it may have with regard to the proposed design on the ground that it does not conform to the criteria mentioned in Paragraph 8. If no objection is received by India from Pakistan within the specified period of three months, then Pakistan shall be deemed to have no objection.”

66. If Pakistan conveys to India any objections, then Paragraph 11 of Annexure D provides that “If a question arises as to whether or not the design of a Plant conforms to the criteria set out in Paragraph 8, then either Party may proceed to have the question resolved in accordance with the provisions of Article IX(1) and (2).”

**D. Information-sharing under Paragraph 19 of Annexure D (Small Plants)**

67. Paragraph 18 of Annexure D introduces the concept of a “Small Plant”, to which “The provisions of paragraphs 8, 9, 10, 11, 12, and 13 shall not apply”. These are defined as new Run-of-River Plants located on a Tributary, which conform to criteria identified in Paragraph 18. One of these criteria is that the “crest of the diversion structure across the Tributary, or the top level of the gates, if any, shall not be higher than 20 feet above the mean bed of the Tributary at the site of the structure.” This means that “Small Plants” are, by definition, those which are capable of storing and altering hardly any water in terms of quantum and pattern of flow.
68. The Treaty nonetheless requires information to be provided about them. According to Paragraph 19 of Annexure D, India must provide the information specified in Appendix III “at least two months in advance of the beginning of construction of the river works connected with a Small Plant”. Appendix III sets out the data that India must provide under four headings: location of Small Plant; hydrologic data; hydraulic data; and particulars of design (unlike Appendix II for Plants that are not “Small Plants”, there is no requirement, for example, to provide data on the estimated effect of the development on the flow pattern below the last plant downstream). So, a similar kind of a framework

for the provision of information about Small Plants is in place, requiring communication between India and Pakistan (or, in the case of objections, from Pakistan to India).

## VII. INDIA'S FRUSTRATION OF THE TREATY PROVISIONS

69. Against the background of the description of the Treaty I have provided in the preceding Sections, **I turn now to provide a factual account of the breakdown in co-operation between the Parties.** In my view, India's failure to comply with the terms of the Treaty has eroded the effectiveness of the Commission (and, by extension, the Treaty). It has also been the cause both of the prior disputes before the Kishenganga Court and the Baglihar Neutral Expert, as well as of the present dispute before the Court.

### A. The functions of the Commission

70. The Treaty is not, and has not now for some considerable period, been operating as intended. India has consistently failed to meet its obligations under the Treaty in respect of information-sharing, tours of inspection, and more. Despite the care with which the provisions of Article VIII (Permanent Indus Commission) were drafted, it has not been possible to resolve disagreements within the Commission. Since 2018, the position has worsened and the Commission is not now, regrettably, operating as intended under the Treaty. In the paragraphs below I explain how the provisions of Article VIII are being frustrated by India.

71. The nature and frequency of Commission meetings: Article VIII (5) states that the Commission shall "meet regularly at least once a year". Between 1961 and 2018 (so since the signing of the Treaty) the Commissioners had been meeting regularly twice a year, almost every year. These meetings would take place over a number of days. This practice was discontinued, however, after 2018, and now the meetings are limited to just once a year and last not more than two days (including the time for preparation and signing of minutes). This is despite the fact that India is engaged in more hydroelectric construction on the Western Rivers than ever before. In recent years, India has been delaying or (most recently) withholding consent to hold the mandatory "regular", or at

least annual, meetings of the Commission, under Article VIII (5).<sup>5</sup>

72. The settlement of questions: Article VIII (4)(b) makes clear that one of the functions of the Commission is to “make every effort to settle promptly, in accordance with the provisions of Article IX (1) any question arising thereunder”. Unfortunately, efforts to settle have been anything but prompt. I have set out below, in table form, the time taken to resolve the differences and disputes that have arisen (or indicated where the dispute remains ongoing):

	Name of Project	Information supplied by India	Objections raised by Pakistan	Period of Resolution	Level of Settlement
1.	Salal Hydroelectric Plant	30 April 1970	17 July 1970	1970 to 1978 (9 years)	Government Level.
2.	Dul Hasti Hydroelectric Plant	03 July 1978	21 September 1978	1978 to 1994 (16 years)	Commission Level.
3.	Wullar Barrage/Tulbul Navigation Project	10 March 1986	30 April 1986	1986 to present day (Resolution not achieved yet)	Work suspended since 1987. Part of Composite Dialogue.
4.	Nimoo Bazgo Hydroelectric Plant	27 December 2006	30 March 2007	2006 to 2010 (5 years)	Commission Level.
5.	Baglihar Hydroelectric Plant	20 May 1992	12 August 1992	1992 to 2007 (15 years)	Neutral Expert.
6.	Kishenganga Hydroelectric Plant	02 June 1994	08 September 1994	1994 to present day (Resolution not achieved yet)	Court of Arbitration.
7.	Chutak Hydroelectric Plant	02 November 2007	04 February 2008	2008 to 2010 (3 years)	Commission Level.
8.	Uri-II Hydroelectric Plant	27 December 2005	01 April 2006	2006 to 2010 (5 years)	Commission Level.

<sup>5</sup> Letter No. WT(51)/(8094-A)/PCIW from the PCIW to the ICIW dated 27 July 2022, **Exhibit P-0218**; Letter No. WT(51)(8099-A)/PCIW from the PCIW to the ICIW dated 8 September 2022, **Exhibit P-0219**; Letter No. WT(51)/(8110-A)/PCIW from the PCIW to the ICIW dated 18 November 2022, **Exhibit P-0220**; Letter No. WT(51)/(8130-A)/PCIW from the PCIW to the ICIW dated 17 May 2023, **Exhibit P-0328**; and Letter No. WT(51)/(8155-A)/PCIW from the PCIW to the ICIW dated 20 February 2024, **Exhibit P-0329**.



73. General Tours of Inspection: Article VIII (4)(c) states that the Commissioners should “undertake once in every five years, a general tour of inspection of the rivers for ascertaining the facts connected with various developments and works on the Rivers [...]”. General tours of inspection used to happen quite frequently, and the Commission adopted a procedure by which every year a tour of at least one river—sometimes two—would be undertaken, so that over five years each river had been visited. This procedure was followed instead of undertaking a tour once in every five years. The agreed method was more convenient and practical. Since 2018 onwards, however, the frequency of the general tours of inspection has been limited to once every five years. The correspondence between the Commissioners shows how many letters I and my predecessor wrote to our Indian counterparts, to persuade them to fulfil India’s important obligation under the Treaty, by allowing us to carry out the general tour of inspection.<sup>6</sup>
74. Special Tours of Inspection: Article VIII (4)(d) also states that there is an obligation “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 by him for ascertaining the facts connected with those works or sites”. Once any such request is made by one of the two Commissioners, the other Commissioner will be under an obligation to arrange a tour of inspection promptly. India has a very poor record in relation to these inspection requests.
75. The purpose behind a tour of inspection under Article VIII (4)(d) is to ascertain the facts connected with the particular work, or site, in relation to which a tour of inspection has been requested. The tour of inspection must therefore incorporate a tangible ability to inspect a site. Even when such tours have taken place, Pakistan has not always been able to properly inspect a site.
76. In recent years my requests for inspections have been ignored by India, or spurious excuses have been given to avoid them taking place.<sup>7</sup> It is not enough for India to say—

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<sup>6</sup> See, generally, the “Explanatory Note on site visit correspondence for the Kishenganga and Ratle Hydroelectric Plants, 2014-2023”, sent to the Court on 9 May 2023, at ¶¶ 23–27. A full set of the correspondence referred to in the Explanatory Note (all of which is on the record in these proceedings) was provided alongside that Note. See also, for example, Record of the 114<sup>th</sup> Meeting of the Permanent Indus Commission, 29–30 March 2018, dated 31 March 2018, **Exhibit P-0180**, ¶ 19; Letter No. WT(51)/(7666-A)/PCIW from the PCIW to the ICIW dated 5 June 2018, **Exhibit P-0184**; and Letter No. WT(45)/(7682-A)/PCIW from the PCIW to the ICIW dated 28 September 2018, **Exhibit P-0192**.

<sup>7</sup> Examples of this are detailed in the “Explanatory Note on site visit correspondence for the Kishenganga and Ratle Hydroelectric Plants, 2014-2023”, provided to the Court on 9 May 2023.

as it has—that it is unable to arrange a tour of inspection because of some local body’s elections, or that weather conditions prevent access.<sup>8</sup> These factors should not prevent inspections and India should, at least, show that it has tried to arrange the visit. I wrote to the Indian Commissioner, pointing out that I was unable to see any such effort, and hence it will be akin to a breach of the Treaty, since the Indian Commissioner was not fulfilling his obligations.<sup>9</sup> Eventually, as a result of the letters, at least, I got some success and I was permitted to conduct a general tour of inspection arranged by India in 2019.<sup>10</sup> This general tour lasted four days (excluding travel) and related only to certain sites and works on the Chenab.<sup>11</sup> Our inspection of three of the four hydroelectric projects all took place within the space of one day, on 30 January.<sup>12</sup>

77. India’s record on tours of inspection is very much indicative of the state of co-operation under the Treaty, and therefore of the implementation of the Treaty. Despite repeated requests, there have been no inspections, general or special, since 2019. Most significantly, there has been a request for a special tour of inspection of the Kishenganga Hydroelectric Plant (“**KHEP**”) pending since 2014. Since 2014, my predecessor, and now I, have been requesting our Indian counterpart promptly to arrange a tour of inspection of that Plant in order to inspect whether India has given effect to the orders of the Court of Arbitration concerning putting in place the adequate arrangements for the release of environmental flow past the KHEP’s dam and into the Neelum River.<sup>13</sup>

## **B. The provision of information**

78. Provision of data regarding the construction of HEPs: India’s failure to comply with Paragraph 9 of Annexure D, read together with Article VII (2) (provisions that I describe at **Sections VI.A and VI.C** above), is one of the main reasons why disputes have arisen

<sup>8</sup> See, for example, Letter No. Y-20017/2/2014-IT /2117 from the ICIW to the PCIW dated 24 November 2014, **Exhibit P-0160**; Letter No. WT(9)/(7658-A)/PCIW from the PCIW to the ICIW dated 9 April 2018, **Exhibit P-0181**; Record of the 115<sup>th</sup> Meeting of the Permanent Indus Commission, 29-30 August 2018 dated 30 August 2018, **Exhibit P-0188**, ¶¶ 33–34; and Letter No. Y-20017/3/2018-IT/2285 from the ICIW to the PCIW dated 20 September 2018, **Exhibit P-0190**.

<sup>9</sup> See, for example, Letter No. WT(9)/(7683-A)/PCIW from the PCIW to the ICIW dated 28 September 2018, **Exhibit P-0191**.

<sup>10</sup> Record of the 119<sup>th</sup> General Tour of Inspection by the Permanent Indus Commission, 27 January-1 February 2019, dated 1 February 2019, **Exhibit P-0201**.

<sup>11</sup> *Id.*.

<sup>12</sup> *Id.*, pp. 2-3.

<sup>13</sup> See the bundle of correspondence entitled “Site visit correspondence concerning the Kishenganga and Ratle Hydroelectric Plants, 2014-2023”, provided to the Court on 9 May 2023; see also *Kishenganga* arbitration, Final Award, **PLA-0004**, § V (Decision).

under the Treaty. By the time India shares any information with Pakistan about the construction of a new Run-of-River hydropower plant on the Western Rivers, its design is already far advanced. The construction works, even other than the river works, have already started—and perhaps even been substantially completed. India thus presents Pakistan with a *fait accompli*, and appears to defend its design—and continue construction—even if Pakistan has convinced it that certain modifications to the design are necessary to bring it into line with the Treaty requirements. Were India to share information in accordance with Article VII (2) (that is, at a much earlier stage in the planning process), those design issues and principles would be much easier to discuss in a spirit of co-operation—before detailed design work had been completed and before the scheme has entered or passed the tendering stage.

79. The information which is required to be provided under Paragraph 9 of Annexure D needs, in reality, to be received much earlier and not just six months before the beginning of construction of river works connected with the plant. It is invariably the case, however, that, whenever Pakistan has received information from India, it has been after Pakistan has already learned that construction activities in connection with the plant have begun—i.e., after mobilisation of the contractor, when contracts have already been awarded and when preliminary works (e.g., construction of access, roads, development of stock piles of the construction material and the construction machinery, etc.) have already started or even been completed.
80. The problem with the delayed provision of information is that (1) it leaves the Parties—usually Pakistan—with a very small time to discuss that information with India, and (2) even if India generally considers that Pakistan has valid concerns about the design, India refuses to consider any of Pakistan's concerns with an open mind (because at the stage at which Pakistan objects, the whole construction schedule has already been agreed, and changes in the design will involve huge additional construction costs). This situation is created by India's own conduct in failing to provide timely information in accordance with Article VII (2). That conduct comes at the detriment not only of Pakistan but also of the Treaty and its spirit, since it dramatically reduces the chance that the Parties will be able to reach agreement.
81. Some years ago, I sought (with no success) to persuade India that these provisions should operate in this manner. Prior to becoming PCIW, as a Principal Engineer employed by

NESPAK, I attended Commission meetings as one of the technical experts assisting the then PCIW. During that meeting I made a request (attributed in the minutes of the meeting, as is usual practice, to the PCIW) to India that it provide us information about new hydroelectric schemes being planned by India prior to the tender stage of its projects, rather than waiting until six months before the start of the construction of the river works, so that dialogue between Pakistan and India could start much earlier and issues resolved amicably before the work at the site was due to begin.<sup>14</sup> India's answer, at the time, was that it was complying with the requirement to provide information about new plants at least six months in advance of the beginning of construction of river works.<sup>15</sup>

82. When we discussed the issue again in 2018, India's response was that future projects (about which PCIW had requested information) had not "achieved the level of certitude to be communicated to Pakistan".<sup>16</sup> This response ignored the purpose of Article VII (2) and the spirit of co-operation required under the Treaty.

83. Since taking up the position of PCIW, I am even more firmly of the view that affording the Parties an early opportunity to consider information and start engaging with each other, even if a project might not ultimately go ahead, would be useful engagement:

83.1. One of the fundamental reasons for this view is that certain aspects of the design of a Run-of-River Plant which are fixed at an early stage in the design process, can generate substantial points of contention and therefore require consideration (and resolution) at an early stage. If elements of this nature (for instance the design flood, the spillways, dam configuration) need subsequently to be changed because of Treaty-compliance issues, the knock-on effects for the design can be significant.

83.2. Assuming for a moment that India did share this information, with both Parties having a strong resolve to cooperate, a meeting agenda when the Commission meets could include India's future plans, even if that might be one or two decades away. This would have the benefit of ensuring that Pakistan would not be caught

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<sup>14</sup> Record of the 104<sup>th</sup> Meeting of the Permanent Indus Commission, 27-31 March 2010 dated 31 May 2010, **Exhibit P-0330**, pp. 15-16. My request was made on behalf of the PCIW, and is recorded in the Record as having been made by PCIW (as is standard practice in the Records).

<sup>15</sup> *Id.*, p. 16.

<sup>16</sup> Record of the 114<sup>th</sup> Meeting of the Permanent Indus Commission, 29-30 March 2018 dated 31 March 2018, **Exhibit P-0180**, ¶ 23; see also Record of the 115<sup>th</sup> Meeting of the Permanent Indus Commission, 29-30 August 2018, dated 30 August 2018, **Exhibit P-0188**, ¶ 20.

by surprise just six months before construction of river works is due to commence, when preliminary works have already been constructed under a fully developed design that breaches the Treaty.

- 83.3. If that kind of an understanding is reached, and as I have explained in Commission meetings,<sup>17</sup> I strongly believe that there will be much less scope for discord. But this requires co-operation, and if there is no co-operation, then successful implementation of the Treaty is difficult to achieve. Without co-operation there is an enduring sense that the Treaty is being implemented on the terms set by the upstream riparian, and not with the even-handedness and mutual trust that the Treaty requires to function as intended.
84. In addition to the impact that India's delay in the provision of information has, the information that is ultimately provided by India under Paragraph 9 and Appendix II of Annexure D for new Run-of-River HEPs is not sufficiently detailed to enable Pakistan to satisfy itself about the conformity of the design with the criteria set out in Paragraph 8. As I explained to the ICIW at the 116<sup>th</sup> Commission meeting, "Article VII (2) must be read together with paragraphs 9 of Annexure D and paragraph 12 of Annexure E of the IWT, both of which require India to transmit **detailed technical information** allowing thereby Pakistan to satisfy itself in view of the Treaty's defined design criteria."<sup>18</sup> As I also added, "compliance with Article VII (2) and the Annexures of the 1960 Treaty is not an end in itself. It is the means by which the 1960 Treaty seeks to avoid conflicts between the Parties."<sup>19</sup>
85. Provision of Hydrological Data: The purpose of Article VI—which I describe in paragraph 29.1 above—is to ensure that the Parties exchange data on a contemporaneous basis and where requested by the other Party. India does not comply with these requirements:

Article VI (1)

85.1. The information which is received from India under Article VI (1) is usually

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<sup>17</sup> See Record of the 116<sup>th</sup> Meeting of the Permanent Indus Commission, 23-24 March 2021, dated 3 March 2022, **Exhibit P-0215**, ¶ 19.

<sup>18</sup> *Id.*, ¶ 48.

<sup>19</sup> *Id.*, ¶ 49.

incomplete. Where data has not been received from the gauging stations, India will record “NR” (not received). Often I will find a table in which all the 30 or 31 rows of that month state “NR”. Despite the passage of three months, India has not eliminated these omissions before exchanging the data, except on a few occasions.

85.2. The standard—rather than exceptional—practice is for information to be shared with a time lag of three months as a matter of course. So, in the month of April, data from the preceding January of the same year has to be furnished by both the Commissioners to each other about their respective gauge and discharge sites. Currently, Pakistan matches the timescales for the exchange of data used by India but we (Pakistan) are both able and willing to exchange data in the shorter timescales envisaged under the Treaty.

Article VI (2)

85.3. Article VI (2) affords either Party the entitlement to request “any data relating to the hydrology of the River, or to canal or reservoir operation connected with the Rivers, or to any provision of this Treaty” and imposes, on the other Party, an obligation to supply that data “to the extent that these are available”. Pakistan has requested information about sediment concentrations (which is one of the data related to the hydrology of the River), but this information has never been provided to Pakistan.

85.4. The resistance which is normally encountered from India when a request is made for data, is that Pakistan is only asking for the data when it is examining the designs of certain projects notified by India. It is true that when reviewing those designs, Pakistan has had cause to ask India for information to be able to understand the philosophy behind India’s decision to fix the design flood, or the philosophy of the sizing of the project, or similar questions. This is not a justifiable reason to withhold the information. Under Article VI, if Pakistan considers that additional information is required, India must provide it if it is “available”.

86. Before I became PCIW, when I was a technical adviser of the (then) PCIW, I on behalf of the PCIW observed that India had not provided data on “silt/sediment” to “ascertain

the necessity of sediment sluicing and the gravity of the sediment issue”.<sup>20</sup> I asked the Indian Commissioner to “share their experience of silt problem in Lower Jhelum and Uri-hydroelectric Plants and also supply the data about the sediment concentration and the particle size distribution along with silt load at Uri-II site”.<sup>21</sup> The response given by India was that “sediment loads and problems vary from project to project and are generally prevalent in all projects on Himalayan rivers”.<sup>22</sup> India did not supply specific data. I present this as an example of what I see as a solid commitment or position on India’s part to refrain from providing details to Pakistan. There is a marked tendency on India’s part to hold back as much information as it can.

87. Provision of Flood Information: The obligation to communicate flood information under Article IV (8) (which I referred to in paragraph 29.6 above) has been the subject of correspondence with the ICIW in recent years and illuminates the different approach which has been taken by India, in recent years as compared to decades gone by, to co-operation under the Treaty.

87.1. In 1988 there were floods which particularly affected the Eastern Rivers and caused havoc in Pakistan. As a result of this, in 1989, the Commissioners for India and Pakistan decided to draw up a mechanism for sharing flood information in advance with each other. This was finalised into a written agreement on the supply of flood information (the “**1989 Agreement**”).<sup>23</sup> It was agreed that the 1989 Agreement would be applicable for that specific year; and it was subsequently renewed every year for the following two decades, usually by referring to its importance on humanitarian grounds.<sup>24</sup>

87.2. I was therefore surprised, in 2019, when I received a response from the ICIW to my request<sup>25</sup> to resume the supply of flood information according to the

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<sup>20</sup> Record of the 99<sup>th</sup> Meeting of the Permanent Indus Commission, 30 May-4 June 2007, dated 4 June 2007, **Exhibit P-0058**, p. 7.

<sup>21</sup> *Id.*.

<sup>22</sup> *Id.*.

<sup>23</sup> Annexure to the Record of the 72<sup>nd</sup> Meeting of the Permanent Indus Commission, 19-22 May 1989, dated 22 May 1989, **Exhibit P-0331**, “Arrangements for the Communication of Information about Flood Flows during the period 1<sup>st</sup> July to 10<sup>th</sup> October 1989”.

<sup>24</sup> See Letter No. WT (61)/(7717-A)/PCIW from the PCIW to the ICIW dated 3 May 2019, **Exhibit P-0332**, p. 1; and Letter No. WT(61)/(7726-A)/PCIW from the PCIW to the ICIW dated 1 July 2019, **Exhibit P-0333**, p. 1.

<sup>25</sup> Letter No. WT (61)/(7717-A)/PCIW from the PCIW to the ICIW dated 3 May 2019, **Exhibit P-0332**; Letter No. WT(61)/(7726-A)/PCIW from the PCIW to the ICIW dated 1 July 2019, **Exhibit P-0333**; Letter No.

Agreement, stating that India “is already supplying all requisite data to Pakistan” under the Treaty.<sup>26</sup> Its only obligation, stated India, was under Article IV (8) to provide information regarding the discharge of water from reservoirs and flood flows (1) when they were of an “extraordinary” nature, and (2) when they would affect Pakistan.<sup>27</sup> My request to renew the previous arrangement was and continues to be refused, for reasons I cannot comprehend.<sup>28</sup> This is especially so since India is fully aware of the 2023 Pakistan floods, which show how vulnerable Pakistan is in this respect. As I emphasised in a recent letter, the “sharing of advance flood flow information in accordance with Flood Agreement 1989 carries immense significance viz-a-viz the protection of lives and property in the areas downstream of the point of entry of flows from India into Pakistan.”<sup>29</sup>

87.3. Since 2019, therefore, India has only provided flood information to the extent that India considers there to have been extraordinary quantity of flow which will affect Pakistan based on India’s own accord and judgment.<sup>30</sup> That information is provided in near real time, not real time, with a time lag of 3-4 hours. This delay in the provision of information could in some circumstances be significant, and lead to loss of life or damage to property.

87.4. My view (as I have explained in correspondence to the ICIW) is that India is under an obligation to provide flood information to Pakistan, in a seamless manner, right from the beginning of the flood season and all the way until the flood season has finished, without any regard to whether or not there is (in India’s view) actually a flood.<sup>31</sup> As I stated in my letter to the ICIW of 3 July 2020, the question of “whether or not the flows in the river entering from India into Pakistan, affect

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WT(61)/(7730-A)/PCIW from the PCIW to the ICIW dated 25 July 2019, **Exhibit P-0334**, reiterated in (among others) Letter No. WT(61)/(7785-A)/PCIW from the PCIW to the ICIW dated 2 June 2020, **Exhibit P-0335**; Letter No. WT(61)/(7886-A)/PCIW from the PCIW to the ICIW (with enclosure) dated 7 June 2021, **P-0336**; Letter No. WT(61)/(7913-A)/PCIW from the PCIW to the ICIW (with enclosure) dated 1 July 2021, **Exhibit P-0337**; Letter No. WT(61)/(8091-A)/PCIW from the PCIW to the ICIW dated 1 July 2022, **Exhibit P-0338**; Letter No. WT(61)/(8134-A)/PCIW from the PCIW to the ICIW dated 7 June 2023, **Exhibit P-0339**; Letter No. WT(61)/(8139-A)/PCIW from the PCIW to the ICIW dated 6 July 2023, **Exhibit P-0340**; Letter No. WT(61)/(8141-A)/PCIW from the PCIW to the ICIW dated 17 July 2023, **Exhibit P-0341**.

<sup>26</sup> Letter No. Y-20014/1/2018-IT/2317 from the ICIW to the PCIW dated 26 July 2019, **Exhibit P-0342**.

<sup>27</sup> Letter No. Y-20014/1/2018-IT/2319 from the ICIW to the PCIW dated 20 August 2019, **Exhibit P-0343**.

<sup>28</sup> See my response, for example, in Letter No. WT(61)/(7739-A)/PCIW from the PCIW to the ICIW dated 1 August 2019, **Exhibit P-0344**.

<sup>29</sup> Letter No. WT(61)/(8141-A)/PCIW from the PCIW to the ICIW dated 17 July 2023, **Exhibit P-0341**.

<sup>30</sup> See, for example, Record of the 118<sup>th</sup> Meeting of the Permanent Indus Commission, 30-31 May 2022, dated 31 May 2022, **Exhibit P-0345**, ¶¶ 12-18.

<sup>31</sup> See Letter No. WT(61)/(7797-A)/PCIW from the PCIW to the ICIW dated 3 July 2020, **Exhibit P-0346**.



Pakistan in terms of flood damages; [...] is for Pakistan to assess, and not [...] India, in view of its population and infrastructure likely to get affected due to any given magnitude of flood.”<sup>32</sup> Pakistan can only make such an assessment if, as I explained in the same letter, “India keeps on continuously communicating [to] Pakistan the flood-flows information available to it, during a given flood season, in advance of entering those flood-flows into Pakistan.”<sup>33</sup>

87.5. Article IV (8) requires each Party to provide “**any** information it may have” regarding “extraordinary discharges of water from reservoirs and flood flows” as may affect the other Party. In this respect, I note that there are sophisticated hydraulic structures (dams and barrages) constructed by India on the Eastern Rivers, which act as metering devices, and therefore India is in possession of a full suite of information. India will have information readily to hand in log books (absent which it cannot properly operate its structures) in relation to the volume of water flowing into the hydraulic structure, how much water is being released through spillways and how much water is being released downstream into the river or into the irrigation channels or the power tunnels. Therefore, Article IV (8) requires India to provide information regarding flood-flows to Pakistan, as far in advance as practicable, in order to enable Pakistan to determine the likely impact of the flood and to make preparations to mitigate the flood damages.

87.6. It has now been 5 years – despite repeated requests – that India has not agreed to renew the 1989 Agreement or the past practice.

## VIII. CONCLUDING OBSERVATIONS

88. The success of the Treaty requires India, as upstream riparian, to remain within the limits defined by the Treaty while carrying out its utilisation of the waters of Indus system of rivers. It cannot maximise its benefits under the Treaty at the expense of adhering to its obligation to let flow the Western Rivers to Pakistan and to the detriment of Pakistan’s right to unrestricted use of the waters of the Western Rivers. The success of the Treaty in this respect also requires India, as upper riparian, to adhere to its cooperation

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<sup>32</sup> *Id.*, p. 2.

<sup>33</sup> *Id.*

commitments in a meaningful manner.

89. In my view, India's attitude in recent years has become increasingly obstructive, at the expense of the co-operation required by the Treaty. The work of the Commission is being frustrated. Information is often simply not shared, or Pakistan is unduly denied access to sites within India. Even where information on the design of Plants is shared, it is shared at the last minute. The restrictions on the design, operation and construction of Run-of-River Plants under Annexure D of the Treaty are only fully functional when India complies with its co-operation and information-sharing obligations under the Treaty, including its obligations to organise General and Special Tours of Inspection. The two must go hand-in-hand.

**STATEMENT OF TRUTH**

I believe that the facts stated in this witness statement are true.

Signed: 

**SYED MUHAMMAD MEHAR ALI SHAH**

Dated: 16 March 2024

# **APPENDIX C**

## **INDIA'S HYDROPOWER PROGRAMME ON THE WESTERN RIVERS**

APPENDIX C

INDIA'S HYDROPOWER PROGRAMME ON THE WESTERN RIVERS

TABLES AND MAPS

1. **Appendix C** is to be read in conjunction with **Chapter 5**. It provides the information, in map and tabular format, that Pakistan has been able to gather concerning India's plans for hydropower construction on the Western Rivers. It consists of two parts. **Appendix C1** consists of three sets of tables—one for each of the Indus, Jhelum and Chenab Rivers and their respective Tributaries. Each table reflects Pakistan's understanding of India's HEP programme for the river systems in question in three categories:

- (a) Completed projects, namely, projects which have been officially notified to Pakistan under Paragraph 9 of Annexure D (for Run-of-River Plants), Paragraph 19 of Annexure D (for Small Plants), or Paragraph 12 of Annexure E (for Storage Works), as appropriate, **and which are now in operation**.
- (b) Under Construction projects, namely, projects that have been notified to Pakistan under the appropriate provision of Annexures D or E but in respect of which **India has not confirmed their entry into operation**, officially or otherwise.
- (c) Planned projects, namely, projects that have not been formally notified to Pakistan by India under Annexures D or E but of which **Pakistan has become aware** through publicly available materials.

2. Each table contains, for each HEP: (a) the project name; (b) its location (or as close thereto as Pakistan has been able to identify); (c) the dam and plant type; (d) its installed (or stated installed) capacity in MW; (e) its storage capacity in million acre-feet ("**MAF**"), divided into dead, live and gross storage; (f) the date on which the plant was formally notified by India to Pakistan under the relevant provision of Annexure D (for Run-of-River HEPs) or Annexure E (for Storage Works); and (g) its current status.

3. If this construction programme is implemented in full, it would result in a network of

**201 Indian HEPs** on the Western Rivers. Although Pakistan's understanding of India's Planned projects is incomplete (particularly with respect to their Dead and Live Storage capacities), nearly all of India's proposed Plants appear to be Run-of-River HEPs subject to Part 3 of Annexure D of the Treaty.

4. **Appendix C2** consists of three maps (prepared by Pakistan), one for each river system, showing each of the projects and their location, insofar as Pakistan has been able to do so on the basis of the available data.

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# **APPENDIX C1**

# INDIA'S HYDROPOWER PROGRAMME ON THE WESTERN RIVERS – TABLES

## COMPLETED PROJECTS ON THE INDUS RIVER

(Source: Official Notifications under Treaty)

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
1	Nimo Bazgo	Indus Main 34°12'54.71" N 77°11'5.72"E	Concrete Gravity Dam	Run of river	45	34,934	7,880	42,814	27.12.2006	Completed
2	Chutak	Suru River 34°29'15.43" N 76°06'50.28" E	Barrage	Run of river	44	477	NIL	477	02.11.2007	Completed
3	Stakna	Indus Main 33°57'3.98" N 77°43'5.54" E	Weir Ungated	Run of river	4	11.5	6.4	17.9	09.09.1968	Completed

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
4	Kargil	Suru River 34°33'6.64" N 76°7'52.05" E	Weir Ungated	Run of river	3.75	1.5	9.3	10.8	30.01.1986	Completed
5	Haftal-I&II	Haftal Nallah 33°26'39.39" N 76°47'7.17"E	Weir Ungated	Run of river	2	0	0	0	31.05.1988	Completed
6	Shaker Chicktan (Sanjak)	Kinji Nallah 34°32'47.09"N 76°30'4.24"E	Trench Weir	Run of river	1.26	0	0	0	31.05.1988	Completed
7	Marpachoo	Sando Nallah 34°18'48.61" N 75°36'28.31" E	Trench Weir	Run of river	0.75	0	0	0	10.11.2010	Completed
8	Dumkhar	Dumkhar Nallah 34°19'56.64" N 76°55'41.52" E	Weir Ungated	Run of river	0.5	0	0	0	30.09.2010	Completed
9	Hunder Nobra	Hunder Nallah 34°35'6.21" N 77°27'29.74" E	Weir Ungated	Run of river	0.4	0	0	0	08.07.1991	Completed
10	Khardung	Khardung Nallah 34°24'3.96" N 77°39'36.68" E	Weir Ungated	Run of river	0.3	0	0	0	26.04.1965	Completed



No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
11	Bazgo	Bazgo Nallah 34°18'40.09" N 77°13'24.19" E	Weir Ungated	Run of river	0.3	0	0	0	04.07.1991	Completed
12	Matayin	Matayin Nallah 34°20'47.56" N 75°37'12.96" E	Open Trench Weir	Run of river	0.12	0	0	0	31.05.1988	Completed
13	Sumoor Nobra	Sumoor Nallah 34°35'34.64" N 77°51'15.05" E	Weir Ungated	Run of river	0.1	0	0	0	04.07.1991	Completed
14	Dras	Dras River 34°31'38.89" N 75°59'13.76" E	Weir Ungated	Run of river	0.075	0	0	0	26.04.1965	Completed
15	Dah	Dah Nallah 34°36'8.37" N 76°30'22.77"E	Weir Ungated	Run of river	9	0	Negligible	0	18.07.2011	Completed
16	Hanu	Hanu Nallah 34°37'3.22" N 76°37'35.47"E	Weir Ungated	Run of river	9	0	Negligible	0	18.07.2011	Completed

**UNDER CONSTRUCTION PROJECTS ON THE INDUS RIVER**

(Source: Official Notifications under Treaty)

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
1	Zunkur	Zunkur Nallah 33°33'10.72" N 76°40'40.89" E	Weir Ungated	Run of river	2.5	0	Negligible	0	09.07.2013	Under Construction
2	Raru	Raru Nallah 33°25'32.28" N 76°54'1.53" E	Weir Ungated	Run of river	2	0	Negligible	0	09.07.2013	Under Construction
3	Bairas	Bairas Nallah 34°24'44.38" N 75°49'41.60" E	Weir Ungated	Run of river	1.5	0	Negligible	0	09.07.2013	Under Construction
4	Sangarh	Sangarh Nallah 34°13'26.73" N 75°58'14.59" E	Trench Weir	Run of river	1.5	0	Negligible	0	11.07.2013	Under Construction
5	Khandi	Khandi Nallah 34°14'25.02" N 76°4'9.50" E	Trench Weir	Run of river	1.5	0	Negligible	0	16.07.2013	Under Construction
6	Waris-III	Waris Nallah	Weir Ungated	Run of river	1.2	0	Negligible	0	10.01.2013	Under Construction

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
		34°51'21.80" N 77°8'12.59" E								
7	Chilong	Chilong Nallah 34°8'51.24" N 75°54'17.19" E	Weir Ungated	Run of river	1	0	Negligible	0	09.07.2013	Under Construction
8	Umbulung	Wakha Umbulung Nallah 34°36'4.30" N 76°7'20.68" E	Weir Ungated	Run of river	1	0	Negligible	0	09.07.2013	Under Construction
9	Matayeen	Matayeen Nallah 34°20'51.95" N 75°36'53.89" E	Weir Ungated	Run of river	1	0	Negligible	0	16.07.2013	Under Construction
10	Chulunkha	Chulunkha Nallah 34°48'10.36" N 77°4'41.90" E	Trench Weir	Run of river	0.8	0	Negligible	0	14.12.2012	Under Construction
11	Bogdang	Bogdang Nallah 34°49'29.67" N 77°3'3.45" E	Trench Weir	Run of river	0.8	0	Negligible	0	23.01.2013	Under Construction
12	Henache	Henache Nallah 34°58'14.75" N 77°10'55.21" E	Trench Weir	Run of river	0.6	0	Negligible	0	9.04.2013	Under Construction
13	Shayok	Shayok Nallah	Weir Ungated	Run of river	0.6	500	0	500	06.02.2013	Under Construction

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
		34°10'27.81" N 78° 9'14.22" E								
14	Turtuk-I	Turtuk Nallah 34°49'15.47" N 76°48'31.11" E	Trench Weir	Run of river	0.5	0	Negligible	0	27.12.2012	Under Construction
15	Tsati	Tsati Nallah 34°31'18.30" N 77°51'23.71"E	Trench Weir	Run of river	0.5	0	Negligible	0	13.03.2013	Under Construction
16	Thusgam Sankoo	Phu Lungma Nallah 34°16'29.45" N 75°59'2.63" E	Weir Ungated	Run of river	0.5	0	Negligible	0	10.07.2013	Under Construction
17	Thusgam Drass	Thsgam Nallah 34°28'21.11" N 75°55'6.78" E	Trench Weir	Run of river	0.5	0	Negligible	0	11.07.2013	Under Construction
18	Chamshen	Chamshen Nallah 34°52'18.88" N 77°47'46.79" E	Trench Weir	Run of river	0.45	0	Negligible	0	09.04.2013	Under Construction
19	Durbuk-II	Changla Nallah 34°6'28.79" N 78°6'27.0" E	Trench Weir	Run of river	0.35	0	Negligible	0	29.01.2013	Under Construction
20	Sumda-dho	Sumda-dho Nallah	Trench Weir	Run of river	0.3	0	Negligible	0	09.04.2013	Under Construction

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
21	Tambis	Tambis Nallah 34°25'33.85" N 76°3'3.27" E	Trench Weir	Run of river	0.2	0	Negligible	0	11.07.2013	Under Construction
22	Tamasha	Tamasha Nallah 33°27'21.60" N 76°52'52.31" E	Weir	Run of river	12	0	Negligible	0	04.02.2019	Under Construction
23	Nimu Chilling	Zanskar River 34° 7'2.46" N 77°13'26.58"E	Barrage	Run of river	24	697	Not applicable	697	24.12.2020	Under Construction
24	Durbuk Shyok	Tangtse/Durbuk River 34° 7'55.00" N 78° 6'27.00" E	Barrage	Run of river	19	202	Not applicable	202	24.12.2020	Under Construction
25	Kargil Hunderman	Suru River 34°33'57.25" N 76° 7'40.11" E	Barrage	Run of river	25	Not Estimated	32.99	32.99	07.07.2021	Under Construction
26	Mangdum Sangra	Suru River 34°13'30.90" N 75°58'19.36" E	Barrage	Run of river	19	932	NIL	932	09.10.2021	Under Construction
27	Sankoo	Suru River 34°17'18.47" N 75°57'54.39" E	Barrage	Run of river	18.5	15.4	NIL	15.4	09.10.2021	Under Construction

**PLANNED PROJECTS ON THE INDUS RIVER**

(Source: Publicly Available Information)

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
1	Sunit	On Indus River	NA	NA	295	NA	NA	NA	NA	Planned
2	Achinathang-Sanjak	On Indus River	NA	NA	220	NA	NA	NA	NA	Planned
3	Drass-Shingo	Drass & Shingo River 1km downstream of confluence	NA	NA	107	NA	NA	NA	NA	Planned
4	Parkhachik-Pankhar	Suru River 34°04'56.28" N 76°2'41.99" E	NA	NA	100	NA	NA	NA	NA	Planned
5	Kartik	Dras River 34°32'41.14" N 76°01'21.77" E	NA	NA	100	NA	NA	NA	NA	Planned

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
6	Khatsi	Indus Main 34°17'35.27" N 77°0'39.79" E	NA	NA	90	NA	NA	NA	NA	Planned
7	Ulitopp	On Indus River	NA	NA	85	NA	NA	NA	NA	Planned
8	Kanunchik	On Indus River Leh District	NA	NA	45	NA	NA	NA	NA	Planned
9	Dumkhar	Indus Main 34°18'12.52" N 76°55'37.73" E	NA	NA	45	NA	NA	NA	NA	Planned
10	Taknachik	Indus River Leh District	NA	NA	30	NA	NA	NA	NA	Planned
11	Drass-Suru-I	Drass-Suru River	NA	NA	35	NA	NA	NA	NA	Planned
12	Drass-Suru-II	Drass-Suru River	NA	NA	60	NA	NA	NA	NA	Planned

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
13	Rongdo	On Indus River	NA	NA	12	NA	NA	NA	NA	Planned
14	Ratan Nag	On Indus River	NA	NA	10.5	NA	NA	NA	NA	Planned
15	Tangste	Tangste River 33°55'12.91" N 78°16'16.08" E	NA	NA	3	NA	NA	NA	NA	Planned
16	Sesomooma	On Indus River	NA	NA	0.75	NA	NA	NA	NA	Planned
17	Thusgam	Indus Main 34°35'32.10" N 76°07'16.27" E	NA	NA	0.5	NA	NA	NA	NA	Planned
18	Kumdok	Indus Main 33°30'46.60" N 78°09'8.94" E	NA	NA	0.5	NA	NA	NA	NA	Planned
19	Igo-Mercellong	Indus Main 33°55'14.75"N 77°44'5.66" E	NA	NA	0.5	0	0	0	NA	Planned



No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
20	Chelloung	Kinji Nullah 34°39'48.97" N 76°18'39.51" E	NA	NA	0.4	NA	NA	NA	NA	Planned

**COMPLETED PROJECTS ON THE CHENAB RIVER**

(Source: Official Notifications under Treaty)

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
1	Baglihar-I&II	Chenab Main 33°9'24.99" N 75°19'23.99" E	Concrete Gravity Dam	Run of river	900	290,700	30,400	321,000	20.05.1992	Completed
2	Dul Hasti	Chenab Main 33°22'5.99" N 75°47'54.99" E	Concrete Gravity Dam	Run of river	780	1,070	6,500	7,570	03.07.1978	Completed
3	Salal-I&II	Chenab Main 33°08'32" N 74°48'27.00" E	Concrete Gravity Dam	Run of river	690	230,303	NIL	230,303	30.04.1970	Completed
4	Ranja-Ala-Dunadi	Kalnai Nullah 33°07'56.49" N 75°51'38.13" E	Trench weir	Run of river	15	0	1.7	1.7	31.05.2010	Completed
5	Chinani-I	Jammu Tawi 33°01'50" N 75°17'14" E	Weir Ungated	Run of river	14	0	0	0	Pre-Treaty 11.10.1961	Completed

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
6	Chinani-III	Jammu Tawi 33°01'50" N 75°17'14" E	NA	NA	7.5	NA	NA	NA	NA	Completed
7	Thirot	Chandara Bhaga 33°39'31" N 76°46'54" E	Trench weir	Run of river	4.5	NIL	5.4	5.4	28.10.1986	Completed
8	Rajouri	Darhali Nullah 33°23'48" N 74°20'4.99" E	Weir Ungated	Run of river	3	NIL	13.65	13.65	31.08.1990	Completed
9	Chinani-II	Jammu Tawi 33°01'50" N 75°17'14" E	Overflow Forebay	Run of river	2	0	0	0	09.02.1989	Completed
10	Badarwah	Haloon Nullah 33°10'42" N 75°46'36.37" E	Weir Ungated	Run of river	1.5	NIL	1.3	1.3	29.07.1989	Completed
11	Ranbir Canal	Ranbir Canal 33°05'27" N 74°49'55" E	Weir Ungated	Run of river	1.2	0	0	0	Pre-Treaty 11.10.1961	Completed
12	Udhampur	Jammu Tawi 32°54'53" N 75°08'25" E	Weir Ungated	Run of river	0.64	0	0	0	Pre-Treaty 11.10.1961	Completed

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
13	Nichalani Banihal	Mangat Nullah 33°26'13" N 75°11'37" E	Weir Ungated	Run of river	0.6	0	0	0	Pre-Treaty 11.10.1961	Completed
14	Kishtwar	Chenab Main 33°18'33" N 75°45'56" E	Weir Ungated	Run of river	0.35	0	0	0	Pre-Treaty 11.10.1961	Completed
15	Killar	Mahal Nullah 33°04'36" N 76°24'12" E	Weir Ungated	Run of river	0.3	0	0	0	12.03.1986	Completed
16	Shansha	Shansha Nullah 32°36'56" N 76°54'48" E	Weir Ungated	Run of river	0.2	0	0	0	23.12.1963	Completed
17	Billing	Billing Nullah 32°28'16" N 77°07'38" E	Weir Ungated	Run of river	0.1	0	0	0	06.03.1962	Completed
18	Sissu	Sissu Nallah 32°28'55" N 77°07'36" E	Weir Ungated	Run of river	0.1	0	0	0	09.07.1964	Completed

**UNDER CONSTRUCTION PROJECTS ON THE CHENAB RIVER**

(Source: Official Notifications under Treaty)

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
1	Pakal Dul	Marusadar 33°27'3.71" N 75°48'40.84" E	Concrete faced Rock fill Dam	Storage	1500	13,790	87,881	101,671	30.11.2012	Under Construction
2	Ratle	Chenab Main 33°10'45.71" N 75°48'26" E	Concrete Gravity Dam	Run of river	850	44,483	19,350	63,833	16.08.2012	Under Construction
3	Miyar	Miyar Nullah 32°46'08" N 76°42'19.84" E	Barrage	Run of river	120	568	730	1,298	27.04.2012	Under Construction
4	Lower Kalnai	Kalnai Nullah 33°08'06" N 75°45'30" E	Concrete Gravity Dam	Run of river	48	892	616	1,508	22.06.2012	Under Construction
5	Khari-I	Mohu Mangat Nullah 33°22'49" N 75°09'38" E	Trench weir	Run of river	2	0	0	0	17.08.2015	Under Construction

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
6	Kiru	Chenab Main 33°20'37.00" N 75°57'34.00" E	Concrete Gravity Dam	Run of river	624	25,141	8,516	33,657	01.06.2021	Under Construction
7	Ans-II	Ans River 33°14'20.35" N 74° 50' 7.11" E	Ungated Weir with under sluice	Run of river	23	111	18	129	09.10.2021	Under Construction
8	Kwar	Chenab Main 33°21'01.00" N 75°53'39.00" E	Concrete Gravity Dam	Run of river	540	14,598	7,429	22,027	21.06.2023	Under Construction

**PLANNED PROJECTS ON THE CHENAB RIVER**

(Source: Publicly Available Information)

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
1	Bursar-I&II	Marau 33°40'21.66" N 75°42'30.26" E	NA	Storage	1230	NA	1,000,000	NA	NA	Planned
2	Sawalkot-I&II	Chenab Main 33°10'59.99" N 75°06'0.00" E	NA	NA	1856	NA	NA	445,891	NA	Planned
3	Kirthai-Naunatu	Chenab Main Near Kirthai Village approximately 5km downstream of Atholi	NA	NA	1190	NA	NA	NA	NA	Planned
4	Kirthai-II	Chenab Main 33°18'41.00" N 76°04'37.00" E	NA	NA	930	NA	13,782	41,557	NA	Planned
5	Raoli	Chenab Main 32°44'34.63" N 76°29'27.22" E	Concrete Gravity Dam	Run of river	420	NA	4,248	9,250	NA	Planned

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
6	Seli	Chenab Main 32°48'0.00" N 76°36'0.00" E	Concrete Gravity Dam	NA	400	NA	NA	6,672	NA	Planned
7	Naunat	Chenab Main 33°16'16.87" N 76°9'49.66" E	NA	NA	400	NA	NA	NA	NA	Planned
8	Kirthai-I	Chenab Main 33°18'41.00" N 76°04'37.00" E	NA	NA	390	NA	13,782	41,557	NA	Planned
9	Dugar	Chenab Main 33°04'25.39" N 76°23'55.43" E	NA	NA	380	NA	NA	NA	NA	Planned
10	Shamnot	Bhut Nullah 33°21'58.74" N 76°15'40.00" E	NA	NA	370	NA	NA	NA	NA	Planned
11	Dugli	On Chenab River	NA	NA	360	NA	NA	NA	NA	Planned
12	Gypsa-I&II	Bhaga River 32°35'23.88" N 77° 8'18.39" E	NA	Storage	240	NA	600,000	NA	NA	Planned
13	Such-Khas	Chenab Main 32°59'47.92" N 76°26'05.30" E	Concrete Dam	Run of river	260	NA	7045	20,462	NA	Planned



No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
14	Barinium	Chenab Main 33°08'0.00" N 76°19'0.00" E	NA	NA	240	NA	NA	NA	NA	Planned
15	Shuas	On Chenab River	NA	NA	230	NA	NA	NA	NA	Planned
16	Sagpari	On Chenab River	NA	NA	210	NA	NA	NA	NA	Planned
17	Tunsha	On Chenab River	NA	NA	150	NA	NA	NA	NA	Planned
18	Gondhala	Chandra Bhaga 32°30'56.00" N 77°01'19.00" E	NA	NA	144	NA	NA	NA	NA	Planned
19	Tandi	Chenab Main 32°33'12.17" N 76°58'24.25" E	NA	NA	140	NA	NA	NA	NA	Planned
20	Rashil	Chenab Main 32°36'41.88" N 76°53'40.88" E	NA	NA	130	NA	NA	NA	NA	Planned
21	Telling	Miyar Nullah 32°26'44.12" N 77°09'25.58" E	NA	NA	130	NA	NA	NA	NA	Planned
22	Bardang	On Chenab River	NA	NA	126	NA	NA	NA	NA	Planned

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
23	Chhatru	Chenab Main 32°19'10.85" N 77°21'52.04" E	NA	NA	120	NA	NA	NA	NA	Planned
24	Koksar	Chenab Main 32°24'52.25" N 74°14'11.75" E	NA	NA	90	NA	NA	NA	NA	Planned
25	Tinget	Miyar Nullah 32°51'9.93" N 76°47'23.17" E	NA	NA	81	NA	NA	NA	NA	Planned
26	Patam	Miyar Nullah 32°52'23.04" N 76°51'19.30" E	NA	NA	65	NA	NA	NA	NA	Planned
27	Kalani-I&II	On Kalnai River	NA	NA	60	NA	NA	600	NA	Planned
28	Bichari	Mohu Mungat Nullah 33°23'52.06" N 75° 7' 46.48" E	NA	NA	45	NA	NA	NA	NA	Planned
29	Ans-I	Ans Nullah 33°14'20.35" N 74° 50' 7.11" E	NA	NA	40	NA	NA	NA	NA	Planned
30	Chenani-IV	Tawi River 33°1'50.86" N 75°17'14.09" E	NA	NA	11.9	NA	NA	NA	NA	Planned

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
31	Gulabgrah	On Ans Nullah	NA	NA	6.5	NA	NA	NA	NA	Planned
32	Hanswar	Chenab Main Doda District	NA	NA	6	NA	NA	NA	NA	Planned
33	Nagadh	Nagadh Nullah/Neeru Nullah Doda District	NA	NA	6	NA	NA	NA	NA	Planned
34	Chenani-V	Tawi River 33°1'50.86" N 75°17'14.09" E	NA	NA	5.4	NA	NA	NA	NA	Planned
35	Jaglano	Upper Ans Nullah Udhampur District	NA	NA	4.5	NA	NA	NA	NA	Planned
36	Chingus-I	Nawshara Tawi Rajouri District	NA	NA	3	NA	NA	NA	NA	Planned
37	Chingus-II	Nawshara Tawi Rajouri District	NA	NA	3	NA	NA	NA	NA	Planned
38	Thana Mandi	Mangota Nullah 33°32'14.71" N 74°22'5.24" E	NA	NA	2.75	NA	NA	NA	NA	Planned

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
39	Atalgrah	Neeru Nullah 33° 6' 15.59" N 75° 34' 43.66" E	NA	NA	2.5	NA	NA	NA	NA	Planned
40	Gwari Gundo	Gawari Nullah Doda District	NA	NA	2.5	NA	NA	NA	NA	Planned
41	Gagal Gwari	Gangal Nullah Doda District	NA	NA	2.2	NA	NA	NA	NA	Planned
42	Chilli	Chilli Nullah Doda District	NA	NA	1.6	NA	NA	NA	NA	Planned
43	Bhalla	Neru Nullah 34° 4' 7.63" N 75° 36' 52.17" E	NA	NA	1.5	NA	NA	NA	NA	Planned
44	Nechlana	Nachtana Banihul District	NA	NA	1	NA	NA	NA	NA	Planned
45	Pogalgarh	Pogalgarh Nullah Doda District	NA	NA	1	NA	NA	NA	NA	Planned
46	Bhari Darhal	Darhali Nullah Rajouri District	NA	NA	1	NA	NA	NA	NA	Planned
47	Mohu Mangat	Mohumanget Nullah 5 km from Nichlana	NA	NA	0.6	NA	NA	NA	NA	Planned

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
48	Jori Budhal	Jori Nullah Rajouri District	NA	NA	0.6	NA	NA	NA	NA	Planned
49	Khari Wali Darhal	Khari Wali Rajouri District	NA	NA	0.3	NA	NA	NA	NA	Planned
50	Anji Nullah	Ans Nullah Udhampur District	NA	NA	0.3	NA	NA	NA	NA	Planned

**COMPLETED PROJECTS ON THE JHELUM RIVER**

(Source: Official Notifications under Treaty)

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
1	Uri-I	Jhelum Main 34°05'30.55" N 74°1'55.32" E	Barrage	Run of river	480	292	NIL	292	19.09.1985	Completed
2	Kishenganga	Kishenganga River 34°38'56.41" N 74°45'5.92" E	Concrete Gravity Dam	Run of river	330	8,758	6,123	14,881	02.06.1994	Completed
3	Uri-II	Jhelum Main 34°05'56.53" N 74°1'12.01" E	Concrete Dam	Run of river	240	5,144	NIL	5,144	27.12.2005	Completed
4	Lower Jhelum	Jhelum Main 34°10'57.59" N 74°16'19.72" E	Barrage	Run of river	105	265	780	1,045	21.11.1974	Completed
5	Upper Sind-II	Wangat Nallah 34°15'22.81" N 74°53'53.51" E	Weir Gated	Run of river	105	11	328	339	18.05.1984	Completed
6	Sumbal	Sind River 34°14'51.62" N 74°03'51.46" E	Weir Ungated	Run of river	22	3.33	162.2	165.53	11.09.1968	Completed

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
7	Gandarbal	Sind River 34°15'8.30" N 74°46'20.73" E	Weir Ungated	Run of river	15	NA	NA	NA	Pre-Treaty 11.10.1961	Completed
8	Mohora	Jhelum Main 34°10'15.14" N 74°14'31.14" E	Weir Ungated	Run of river	12	0	0	0	11.10.1961	Completed
9	Tangmarg	Ferozepur Nallah 34° 2'18.33"N 74°24'29.59"E	Weir Ungated	Run of river	10	0	1.04	1.04	26.08.2009	Completed
10	Athawatto	Madhumatti Nallah 34°26'42.57" N 74°38'54.03" E	Weir Ungated	Run of river	10		1	1	13.05.2009	Completed
11	Brenwar	River Doodh-Ganga 33°51'33.83" N 74°50'27.34" E	Weir Ungated	Run of river	7.5		0.6	0.6	01.10.2009	Completed
12	Pahalgam	Lidder Nullah 34°0'19.96"N 75°18'57.00"E	Weir Ungated	Run of river	4.5	1.9	0	1.9	30.11.1988	Completed
13	Karnah	Quazi Nag Nullah 34°22'5.47"N 73°47'58.77"E	Trench Weir	Run of river	2	0	0	0	09.04.1986	Completed

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
14	Asthan Nallah	Asthan Nallah 34°37'53.33" N 74°49'10.59" E	Trench Weir	Run of river	0.75	NIL	7.9	7.9	29.09.1988	Completed
15	Keran	Keshar Katta Nallah 34°38'36.02" N 73°57'56.29" E	Trench Weir	Run of river	0.7	0	0	0	05.09.1988	Completed
16	Matchil	Dadhi Nallah 34°40'18.02" N 74°26'23.65" E	Trench Weir	Run of river	0.35	0	0	0	29.06.1988	Completed
17	Poonch	Betar Nallah 33°46'29.56" N 74°4'45.00" E	Weir Ungated	Run of river	0.16	0	0	0	Pre-Treaty 11.10.1961	Completed
18	Kupwara	Pohru River 34°31'29.99" N 74°15'20.25" E	Weir Ungated	Run of river	0.15	0	0	0	Pre-Treaty 11.10.1961	Completed
19	Dachigam	Dagwan Nallah 34°7'14.29" N 74°56'48.48" E	Weir Ungated	Run of river	0.04	0	0	0	Pre-Treaty 11.10.1961	Completed
20	Bandipura	Madmatti Nallah 34°26'32.07" N 74°38'33.75" E	Weir Ungated	Run of river	0.03	0	0	0	Pre-Treaty 11.10.1961	Completed



**UNDER CONSTRUCTION PROJECTS ON THE JHELUM RIVER**

(Source: Official Notifications under Treaty)

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
1	New Ganderbal	Sind River 34°12'56.45" N 74°46'07.34" E	Barrage	Run of river	93	40.6	81.1	121.7	26.02.2013	Under Construction
2	Parnai	Suran River 33°36'41.14" N 74°21'07.53" E	Barrage	Run of river	37.5	15.3	54.8	70.2	15.01.1990	Under Construction
3	Boniyar	Hapat Khai 34°09'12.69" N 74°11'56.83" E	Weir Ungated	Run of river	8	NIL	1.2	1.2	21.09.2011	Under Construction
4	Kehmil	Kehmil Nallah 34°35'27.35" N 74°07'2.79" E	Trench Weir	Run of river	4	NIL	0.73	0.73	07.03.2011	Under Construction
5	Baltikulan	Baltikulan Nallah 34°17'38.98" N 75°11'49.85" E	Trench Weir	Run of river	5	0	0	0	04.02.2019	Under Construction
6	Kalaroos-II	Kalaroos Nallah 34°36'25.31" N 74°22'21.17" E	Boulder Weir	Run of river	10.5	0	0	0	04.02.2019	Under Construction

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
7	Kulan Ramwari	Sind Nallah 34°16'1.44" N 75° 9'0.03" E	Weir	Run of river	25	Not Applicable	NIL	-	07.07.2021	Under Construction
8	Phagla	Chang Nallah 33°37'5.54" N 74°21'26.32" E	Weir	Run of river	14.10	Not Estimated	NIL	-	07.07.2021	Under Construction
9	Mandi	Mandi River 33°45'55.52" N 74°13'7.75" E	Weir	Run of river	15.00	0.87	1.79	2.65	10-08.2021	Under Construction

**PLANNED PROJECTS ON THE JHELUM RIVER**

(Source: Publicly Available Information)

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
1	Sonarmarg	Sind Rirver 34°18'15.64" N 75°17'32.59" E	NA	NA	165	NA	NA	NA	NA	Planned
2	Ganga Bal	Gangabal Lake 34°25'46.31" N 74°55'31.37" E	NA	NA	100	0	0	0	NA	Planned
3	Shutkari Kullan	On Jhelum Tributary	NA	NA	84	0	0	0	NA	Planned
4	Lidder-I	Lidder Nullah 34°5'18.0" N 75°15'46.24" E	NA	NA	50	0	0	0	NA	Planned
5	Lidder-II	Lidder Nullah 34°5'12.27" N 75°15'42.99" E	NA	NA	45	0	0	0	NA	Planned
6	Batakote Sakrus	Lidder Nullah 33°48'7.91" N 74°15'34.88" E	NA	NA	36	0	0	0	NA	Planned

Pakistan's Memorial - Appendix C1

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
7	Kanzil Wangath	Wangath Nullah 34°16'50.23" N 74°54'17.83" E	NA	NA	27	0	0	0	NA	Planned
8	Nanwan Batkote	On Jhelum Tributary	NA	NA	22.6	0	0	0	NA	Planned
9	Aharbal	Vishow Nullah 33°38'32.54" N 74°46'41.79" E	NA	NA	22.5	0	0	0	NA	Planned
10	Vishow-I	Vishow Nullah 33°45'52.46" N 75°4'43.08" E	NA	NA	15	0	0	0	NA	Planned
11	Hirpora	On Jhelum Tributary 33°41'28.59" N 74°47'23.47" E	NA	NA	12	0	0	0	NA	Planned
12	Girjan ki Gali	On Suran River	NA	NA	12	0	0	0	NA	Planned
13	Mawar (Nawgam)	Mawar Nullah 34°20'46.83" N 74°12'16.75" E	NA	NA	10	0	0	0	NA	Planned
14	Erin	Erin Nallah 34°24'37.73" N 74°40'43.31" E	NA	NA	10	0	0	0	NA	Planned

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
15	Sukhnag	Sukhnag Nullah 34°13'8.82" N 74°35'16.10" E	NA	NA	9	0	0	0	NA	Planned
16	Chandenwari-Uri	Chandenwah Nullah 34°0'49.25" N 75°19'0.72" E	NA	NA	7	0	0	0	NA	Planned
17	Laripora	On Jhelum Tributary 34°2'5.44" N 75°19'26.28" E	NA	NA	6	0	0	0	NA	Planned
18	Nihama	Vishow Nullah 33°38'11.97" N 75°1'2.65" E	NA	NA	6	0	0	0	NA	Planned
19	Loran	Loran Nullah 33°47'8.71" N 74°20'.55.24" E	NA	NA	6	0	0	0	NA	Planned
20	Shaliganga	Shaliganga Nullah 33°55'26.22" N 75°41.18.12" E	NA	NA	4.5	0	0	0	NA	Planned
21	Bringi	Bringi Nullah 33°43'21.19" N 74°19.46.05" E	NA	NA	4	0	0	0	NA	Planned

Pakistan's Memorial - Appendix C1

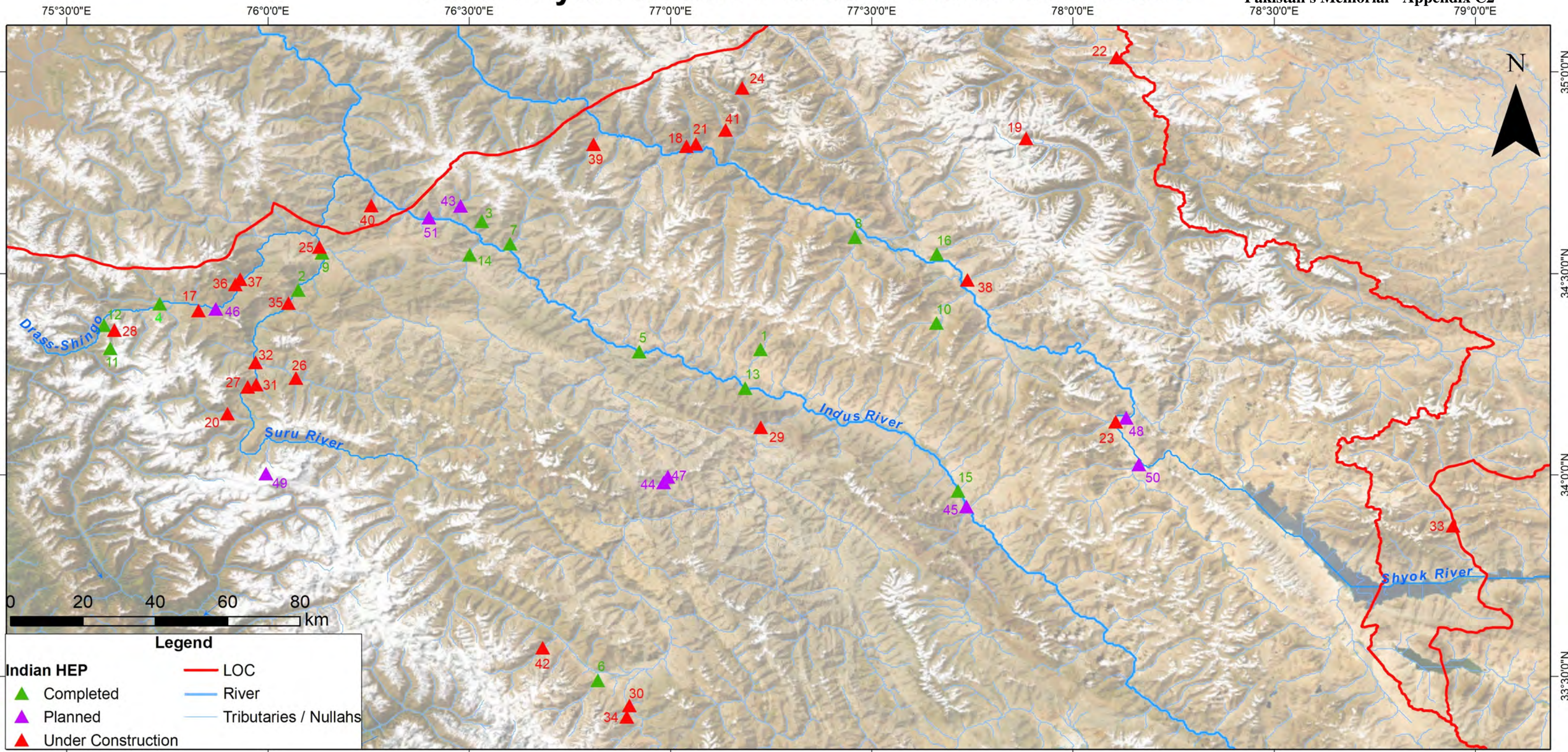
No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
22	Martand Canal	Lidder Nullah	NA	NA	3	0	0	0	NA	Planned
23	Sultan Pathari (Loran)	Nandi Chhul Nullah	NA	NA	3	0	0	0	NA	Planned
24	Sei Ellahi Bakhsi (Loran)	Sukhnag Nullah	NA	NA	2.6	0	0	0	NA	Planned
25	Hariwar	Baramula Boniyar Nullah	NA	NA	2.6	0	0	0	NA	Planned
26	Aru (Pahalgam)	Lidder Nullah	NA	NA	2.5	0	0	0	NA	Planned
27	Sranz Ningli	Ningili Nullah	NA	NA	2.3	0	0	0	NA	Planned
28	Dachigam	Dachigam Nullah	NA	NA	2	0	0	0	NA	Planned
29	Boniyar-III	Boniyar Nallah	NA	NA	1.2	0	0	0	NA	Planned
30	Tulail	Kishanganga River	NA	NA	1	0	0	0	NA	Planned
31	Thajwas	Sind Nullah	NA	NA	1	0	0	0	NA	Planned
32	Pranvas	Srinagar Sind Nullah	NA	NA	1	0	0	0	NA	Planned
33	Gund	Sind Nullah	NA	NA	0.73	0	0	0	NA	Planned

No	Project	Location	Type	Plant Type	Installed Capacity (MW)	Storage Capacity (MAF)			Information Provided by India	Status
						Dead	Live	Gross		
34	Chittergul	Sind Nullah	NA	NA	0.73	0	0	0	NA	Planned
35	Kulan	Sind Nullah	NA	NA	0.73	0	0	0	NA	Planned
36	Chewdara	Sukhnag Nullah	NA	NA	0.126	0	0	0	NA	Planned

# **APPENDIX C2**



# Indian Hydroelectric Plants in Indus River Basin

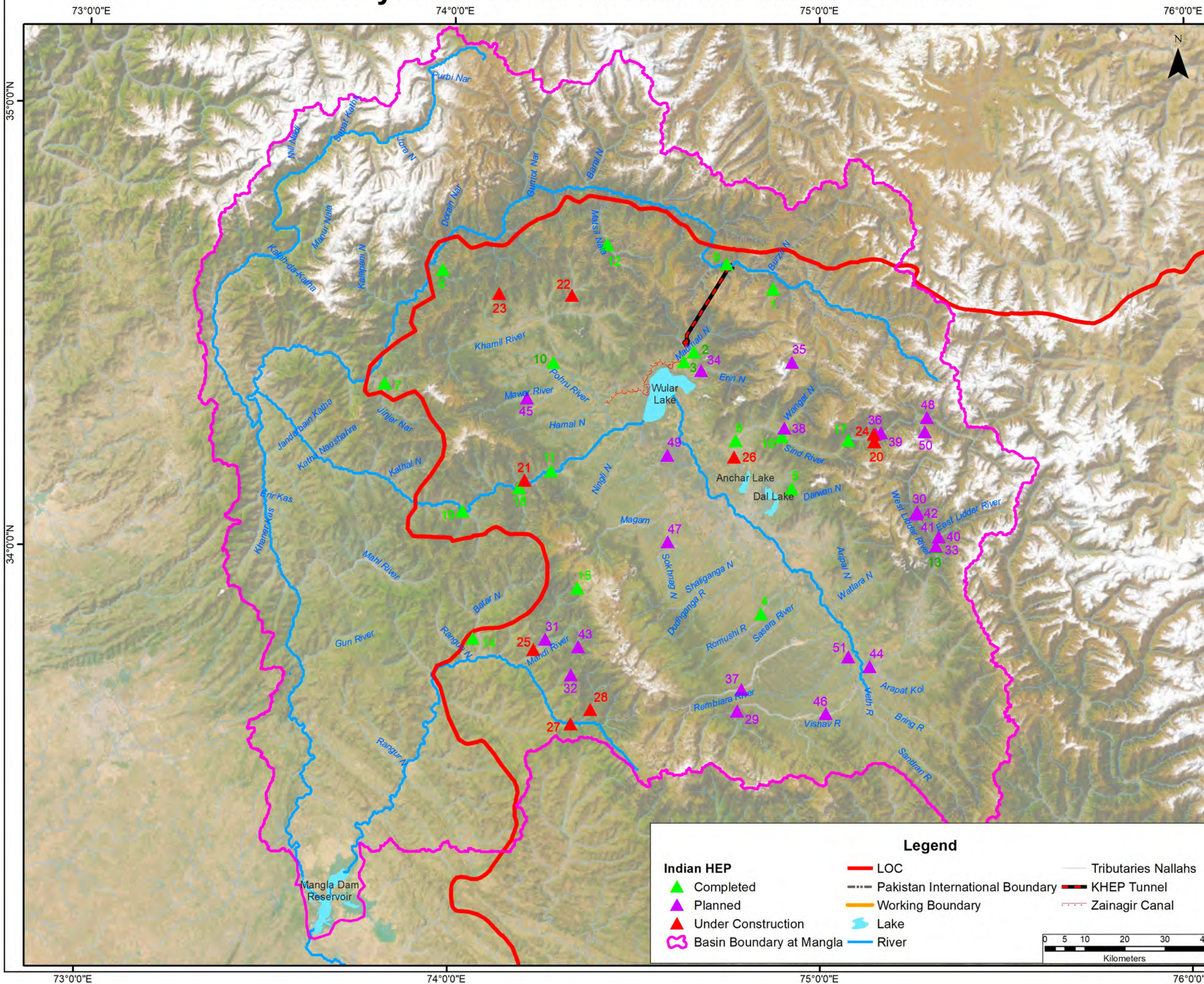


**Legend**

- ▲ Indian HEP
  - ▲ Completed
  - ▲ Planned
  - ▲ Under Construction
- LOC
- River
- Tributaries / Nullahs

Id	Name	Installed Capacity (MW)	Gross Storage (ac-ft)	Id	Name	Installed Capacity (MW)	Gross Storage (ac-ft)	Id	Name	Installed Capacity (MW)	Gross Storage (ac-ft)	Id	Name	Installed Capacity (MW)	Gross Storage (ac-ft)	Id	Name	Installed Capacity (MW)	Gross Storage (ac-ft)
1	Bazgo	0.3	0	14	Shaker Chicktan (\$	1.26	0	27	Mangdum Sangra	19	932	40	Umbulung	1	0	53	Achinathar	220	NA
2	Chutak	44	477	15	Stakna	4	17.9	28	Matayeen	1	0	41	Waris-III	1.2	0	54	Drass- Su	35	NA
3	Dah	9	0	16	Sumoor Nobra	0.1	0	29	Nimo Chilling	24	697	42	Zunkur	2.5	0	55	Drass- Su	60	NA
4	Dras	0.075	0	17	Bairas	1.5	0	30	Raru	2	0	43	Chelloung	0.4	NA	56	Drass-Shir	107	NA
5	Dumkhar	0.5	0	18	Bogdang	0.8	0	31	Sangarh	1.5	0	44	Dumkhar	45	NA	57	Kanunchik	45	NA
6	Haftal I & II	2	0	19	Chamshen	0.45	0	32	Sankoo	18.5	15.4	45	Igo-Mercellong	0.5	0	58	Ratan Nag	10.5	NA
7	Hanu	9	0	20	Chilong	1	0	33	Shayok	0.6	500	46	Kartik	100	NA	59	Rongdo	12	NA
8	Hunder Nobra	0.4	0	21	Chulunkha	0.8	0	34	Tamasha	12	0	47	Khatsi	90	NA	60	Sesomoon	0.75	NA
9	Kargil	3.75	10.8	22	Durbuk-II	0.35	0	35	Tambis	0.2	0	48	Kumdok	0.5	NA	61	Sunit	295	NA
10	Khardung	0.3	0	23	Durburk Shyok	19	202	36	Thusgam Drass	0.5	0	49	Parkhachik-Pankhar	100	NA	62	Taknachik	30	NA
11	Marpachoo	0.75	0	24	Henache	0.6	0	37	Thusgam Sankoo	0.5	0	50	Tangste	3	NA	63	Ulitopp	85	NA
12	Matayin	0.12	0	25	Kargil Hunderman	25	33.0	38	Tsati	0.5	0	51	Thusgam	0.5	NA	Location Not Available (NA) for HEPs 52-63			
13	Nimo Bazgo	45	42814	26	Khandi	1.5	0	39	Turtuk-I	0.5	0	52	Sumda-dho	0.3	0				

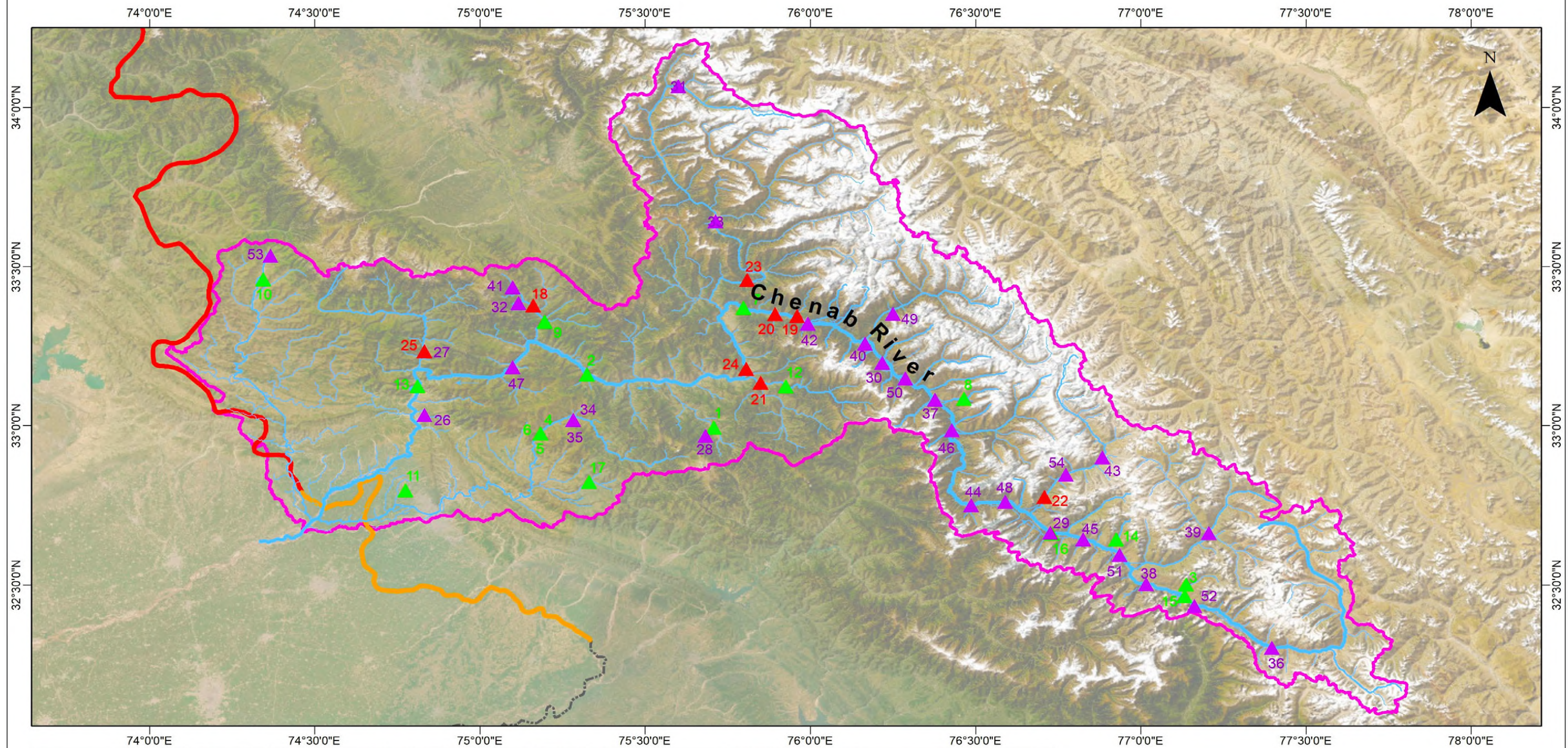
# Indian Hydroelectric Plants in Jhelum River Basin



Id	Name	Installed Capacity (MW)	Gross Storage (ac-ft)
1	Asthan Nallah	0.75	7.9
2	Athwatto	10	1
3	Bandipura*	0.03	0
4	Brenwar	7.5	0.6
5	Dachigam*	0.04	0
6	Gandarbal*	15	NA
7	Karnah	2	0
8	Keran	0.7	0
9	Kishenganga	330	14881
10	Kupwara*	0.15	0
11	Lower Jhelum	105	1045
12	Matchil	0.35	0
13	Pahalgam	4.5	1.9
14	Poonch*	0.16	0
15	Tangmarg	10	1.0
16	Upper Sind-II	105	339
17	Upper Sind I / Sumbal	22	165.5
18	Uri-I	480	292
19	Uri-II	240	5144
20	Baltikulan	5	0
21	Boniyar	8	1.2
22	Kalaroos-II	10.5	0
23	Kehmil	4	0.7
24	Kulan Ramwari	25	-
25	Mandi	15	2.7
26	New Ganderbal	93	121.7
27	Parnai	37.5	70.2
28	Phagla	14.1	NE
29	Aharbal	22.5	0
30	Aru (Pahalgam)	2.5	0
31	Batakote Sakrus	36	0
32	Bringi	4	0
33	Chandenwari-Uri	7	0
34	Erin	10	0
35	Ganga Bal Storage	100	0
36	Gund	0.73	0
37	Hirpora	12	0
38	Kanzil Wangath	27	0
39	Kulan	0.73	0
40	Laripora	6	0
41	Lidder Stage-I (Shesnag Chandanwari)	50	0
42	Lidder Stage-II Chandanwari - Laripora	45	0
43	Loran	6	0
44	Martand Canal	3	0
45	Mawar (Nawgam)	10	0
46	Nihama (Kulgam)	6	0
47	Sei Ellahi Bakhsi (Loran)	2.6	0
48	Sonarmarg Storage Scheme	165	NA
49	Sukhnag	9	0
50	Thajwas	1	0
51	Vishow Stage - Anantng	15	0
52	Boniyar-III	1.2	0
53	Chewdara	0.13	0
54	Chittergul	0.73	0
55	Dachigam	2	0
56	Girgan Ki Gali	12	0
57	Hariwar	2.6	0
58	Nanwan Batkote	22.6	0
59	Pranvas	1	0
60	Shaliganga	4.5	0
61	Shutkari Kullian	84	0
62	Sranz Ningli	2.3	0
63	Sultan Pathari	3	0
64	Tulail	1	0

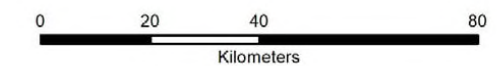
Note:  
 \* Pre-Treaty Hydroelectric Plants  
 Location Not Available (NA) for HEPs 52-64  
 NE = Not Estimated

# Indian Hydroelectric Plants in Chenab River Basin



Id		Name		Installed Capacity (MW)	Gross Storage (ac-ft)	Id		Name		Installed Capacity (MW)	Gross Storage (ac-ft)	Id		Name		Installed Capacity (MW)	Gross Storage (ac-ft)		
1	Badarwah	1.5	1.3	17	Udhampur*	0.64	0	33	Bursar I & II	1230	1000000	49	Shamnot	370	NA	65	Jori-Budhal	0.6	NA
2	Baglihar I & II	900	321000	18	Khari-I	2	0	34	Chenani -IV	11.9	NA	50	Shuas	230	NA	66	Kalnai I & II	60	600
3	Billing	0.1	0	19	Kiru	624	33657	35	Chenani -V	5.4	NA	51	Tandli	140	NA	67	Khari Wali Darhal	0.3	NA
4	Chenani I*	14	0	20	Kwar	540	22027	36	Chhatru	120	NA	52	Telling	130	NA	68	Kirthai Naunatu	1190	NA
5	Chenani II	2	0	21	Lower Kalnai	48	1508	37	Dugar	380	NA	53	Thana Mandi	2.75	NA	69	Koksar	90	NA
6	Chenani III	7.5	NA	22	Miyar	120	1298	38	Gondhala	144	NA	54	Tinget	81	NA	70	Nagadh	6	NA
7	Dulhasti	780	7570	23	Pakul Dul	1500	101671	39	Gyspa I & II	240	600000	55	Bhari-Darhal	1	NA	71	Nechlana	1	NA
8	Killer	0.3	0	24	Ratle	850	63833	40	Kirthai I & II	1320	41557	56	Chilli	1.6	NA	72	Pogalgarh	1	NA
9	Nichalani Banihal*	0.6	0	25	Ans Stage -II	23	129.4	41	Mohu Mangat	0.6	NA	57	Chingus-I	3	NA	73	Sagpari	210	NA
10	Rajouri	3	13.65	26	Anji Nullah	0.3	NA	42	Naunat	400	NA	58	Chingus-II	3	NA	74	Tunsha	150	NA
11	Ranbir Canal*	1.2	0	27	Ans Stage -I	40	NA	43	Patam	65	NA	59	Dugli	360	NA				
12	Ranja-Ala Dunadi	15	1.7	28	Atalgrah	2.5	NA	44	Raoli	420	9250	60	Gagal-Gwari	2.2	NA				
13	Salal I & II	690	230303	29	Bardang	126	NA	45	Rashil	130	NA	61	Gulabgrah	6.5	NA				
14	Shانشا	0.2	0	30	Barinium	240	NA	46	Sach Khas	260	20462	62	Gwari-Gundo	2.5	NA				
15	Sissu	0.1	0	31	Bhalla	1.5	NA	47	Sawalkot I & II	1856	445891	63	Hanswar	6	NA				
16	Thirot	4.5	5.4	32	Bichari	45	NA	48	Seli	400	6672	64	Jaglano	4.5	NA				

Note:  
\* Pre-Treaty Hydroelectric Plants  
Location Not Available (NA) for HEPs 55-74



**Legend**

**Indian HEP Status**

- ▲ Completed
- ▲ Planned
- ▲ Under Construction
- Basin Boundary at Marala

**Other Features**

- River
- Main Streams
- Tributaries / Nullahs
- LOC
- Pakistan International Boundary
- Working Boundary

**APPENDIX D**

**FLOW DATA OF THE INDUS AND ITS  
PRINCIPAL TRIBUTARIES IN  
PAKISTAN**

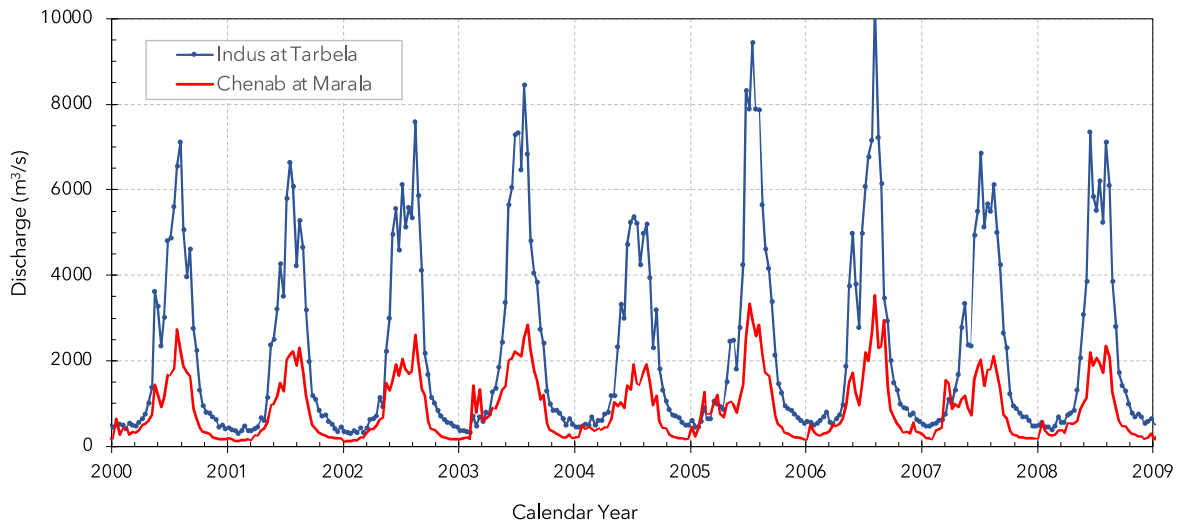
APPENDIX D

FLOW DATA OF THE INDUS AND ITS PRINCIPAL TRIBUTARIES IN PAKISTAN

1. Pakistan monitors the volume of flows in the Indus River and its principal tributaries at the following Remote Inflow Measurement (“RIM”) stations:
  - a. Indus River at Tarbela Dam.
  - b. Indus River at Kalabagh. The location of this RIM station is downstream the confluence of the Kabul River with the Indus River. The flow record of the Indus River at Kalabagh takes into account the flows of the Indus River and the Kabul River, while neglecting the regulation impact of Kalabagh dam.
  - c. Kabul River at Nowshera.
  - d. Jhelum River at Mangla Dam.
  - e. Chenab River at Marala Barrage.
  - f. Ravi River at Madhopur Barrage. This barrage is India's last control structure on the Ravi River and is located within 30 km of the border between the two countries. India provides data on barrage outflows to Pakistan under the Treaty.
  - g. Sutlej River at Ferozpur Barrage. This barrage is India's last control structure on the Sutlej River and is located within 1 km of the border between the two countries. India provides data on barrage outflows to Pakistan under the Treaty.
2. Of these stations, the flow data of only those classified as Western and Eastern rivers per the Treaty have been reproduced and analysed herein.<sup>1</sup> The relevant gauging stations are (i) Indus at Tarbela, (ii) Jhelum at Mangla, (iii) Chenab at Marala, (iv) Ravi at Madhopur and (v) Sutlej at Ferozpur.
3. A 10-year graph illustrating the seasonality of flow has been prepared below.

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<sup>1</sup> Data on annual inflow volumes into Pakistan of the Indus, Jhelum, Chenab, Ravi, and Sutlej Rivers, **Exhibit P-0402**.



**Figure 1 - 10-year 10-day discharges of the Indus and Chenab Rivers**

4. **Analysis start date.** For the analysis of post-Treaty flows, the earliest date when flow data are available from all stations is April 1961, which coincides with the beginning of the 1961 *kharif* season. Accordingly, data for each year begin with the *kharif* in April and ends in March of the following year. Thus, the “1961” data, for example, extends from 1 April 1961 to 31 March 1962, and the *rabi* flow data designated as 1961 extends from October 1961 through March 1962. This reporting format has been followed for all years.

5. **30-year averages.** The trailing 30-year averages have been calculated for the earliest possible date which is 1990 (average of data from 1961 – 1990), and also for the last date which is 2022 (average of data from 1993-2022). These values are summarised in **Figure 2** below.

Location	30-yr Average 1961-1990, MAF			30-yr Average 1993-2022, MAF		
	<i>Kharif</i>	<i>Rabi</i>	Total	<i>Kharif</i>	<i>Rabi</i>	Total
Indus at Tarbela	52.52	8.33	60.85	50.28	8.85	59.13
Jhelum at Mangla	17.53	4.89	22.42	15.95	4.93	20.88
Chenab at Marala	21.48	4.42	25.89	19.50	4.49	23.98
<b>Western Rivers (total)</b>	<b>91.53</b>	<b>17.64</b>	<b>109.16</b>	<b>85.73</b>	<b>18.27</b>	<b>103.99</b>
Ravi at Madhopur	1.88	0.22	2.11	0.56	0.05	0.61
Sutlej at Ferozpur	5.84	0.68	6.53	1.68	0.17	1.85

**Figure 2 - Thirty-Year Average flows of Indus and its principal tributaries**

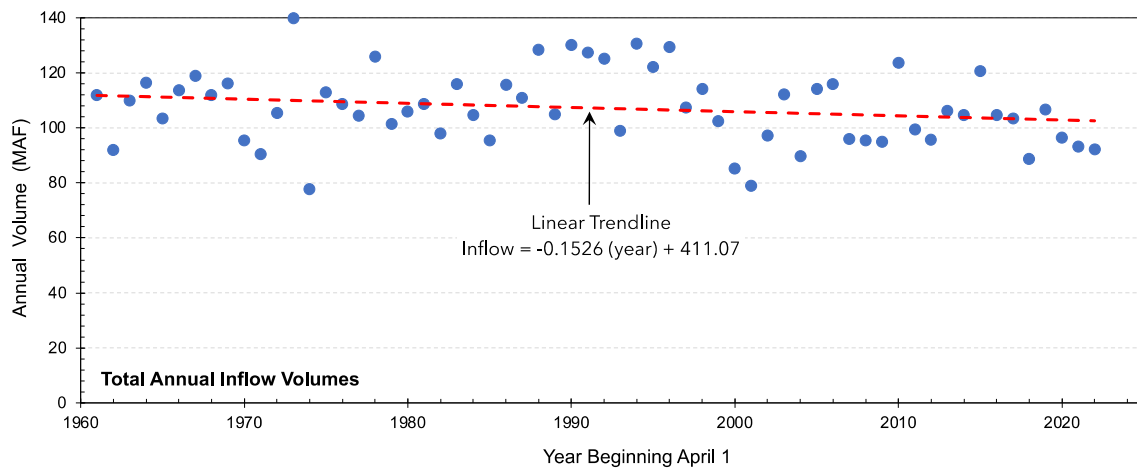
6. **Annual flows.** The annual flow volumes for each irrigation season and for the entire year (April – March) have been plotted, and an Excel linear trendline has been applied, with

the resulting trendline superimposed on the data. The downward trends in both annual and *khariif* flow volumes are readily apparent. In contrast, the *rabi* flows show a slight increase. The *rabi* season increase may be due to warming that extends the meltwater season into the *rabi* (winter) season. **Figure 3** below summarises several of the relevant parameters plus the 30-year average from 1993-2022. In preparing this table, the 1961 and 2022 flow rates have been computed using the trendline equation presented in each graph (following the table).

Season	1961 Flow, MAF/yr	2022 Flow, MAF/yr	1961-2022 Percent Change	1993-2022 (30-yr) Avg., MAF/yr
<i>Khariif</i>	94.8	83.5	- 11.9 %	85.7
<i>Rabi</i>	27.0	19.0	+ 11.5 %	18.3
Annual Total	111.8	102.5	- 8.3 %	104.0

**Figure 3 - Total flow trends for the Western Rivers<sup>2</sup>**

7. Graphs of the annual flows in the Western Rivers are presented below, including the linear trendline plots and corresponding equations for the annual flow volumes.



**Figure 4 - Annual inflow volumes of the Western Rivers from 1961-2022**

<sup>2</sup> Total flow is calculated as the sum of Indus at Tarbela, Jhelum at Mangla, and Chenab at Marala.

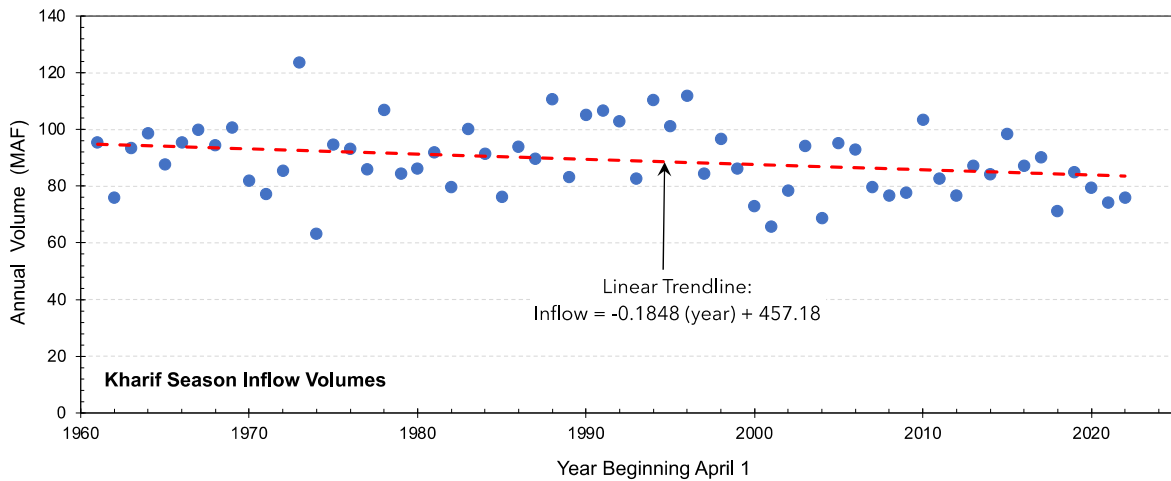


Figure 5 - *Kharif* season inflow volumes of the Western Rivers from 1961-2022

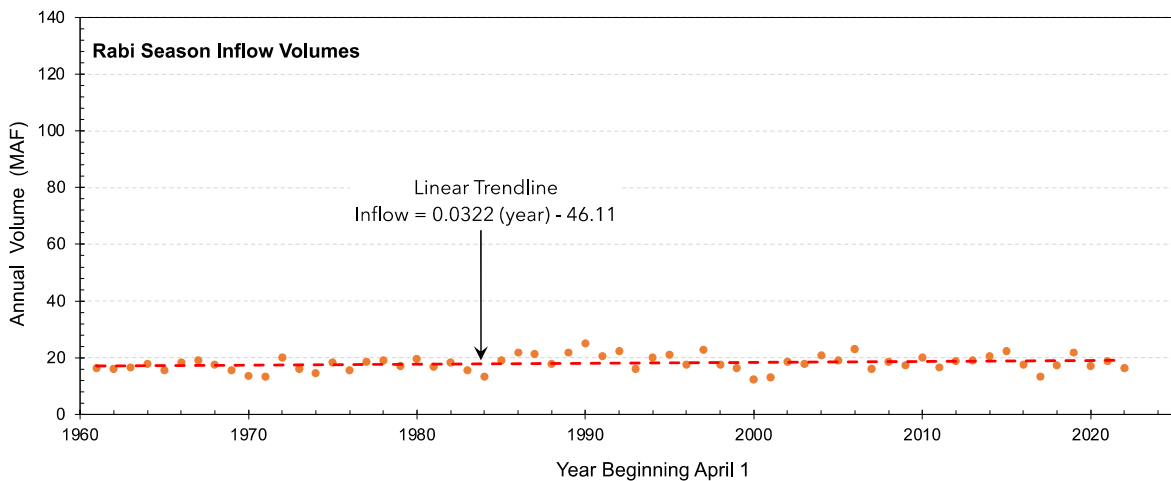


Figure 6 - *Rabi* season inflow volumes of the Western Rivers from 1961-2022

8. **Statistical analysis.** A statistical analysis of the data was performed using the Mann-Kendall test and Sen's slope analysis.<sup>3</sup> The Mann-Kendall test examines a data series to determine if a statistically significant trend exists, at a stated level of confidence, but it does not provide information on either the direction or the magnitude of the trend. The Sen's slope analysis, on the other hand, gives the slope of the trend, with the range of possible slopes varying with the level of confidence. The statistical analysis results for the time series of flows in Western rivers are summarised below in **Figure 7**.

9. These results indicate that for all rivers tested except the Jhelum, there is a 90% level of confidence that there is a downward trend in the flows over the period 1961-2022. For the

<sup>3</sup> Statistical computations were generated using the Real Statistics Resource Pack software (Release 8.9.1) installed in Excel<sup>®</sup> authored by Charles Zaiontz, available at: [www.real-statistics.com](http://www.real-statistics.com) (last accessed 18 March 2024).



Jhelum, although a slight downward trend is shown, it is neither strong enough, nor consistent enough, to be considered statistically significant per the Mann-Kendall test. As can also be seen in the figure, both the Sen's slope analysis and the linear trendline produce similar values for trend slope, indicating a downward trend in the flows of the Western Rivers.

River	Mann-Kendall Trend Confirmation		Sen's Slope	Least Squares Linear Trendline Slope
	90% Confidence	95% Confidence		
Indus at Tarbela	Yes	No	-0.073	-0.075
Jhelum at Mangla	No	No	-0.036	-0.030
Chenab at Marala	Yes	No	-0.057	-0.048
<b>Western Rivers (total)</b>	Yes	No	-0.182	-0.153

Figure 7 – Statistical parameters for analysis of trends in annual flows of Western Rivers

\* \* \*

# **APPENDIX E**

## **CALCULATION OF MAXIMUM PONDAGE UNDER ANNEXURE D, PARAGRAPH 8(C)**

Appendix E

**CALCULATION OF MAXIMUM PONDAGE UNDER  
ANNEXURE D, PARAGRAPH 8(C)**

1. **Appendix E** provides the supporting information for Pakistan’s Chapter 12 concerning the calculation of maximum Pondage under Paragraph 8(c) of Annexure D, which fixes the size of an Annexure D.3 HEP’s Operating Pool and the Dead Storage Level in its reservoir. It is in two parts.
2. The first part is **Appendix E1**, which contains the river discharge dataset for the site of the Kiru HEP, being the Plant that Pakistan has selected to demonstrate the correct approach to the calculation of maximum Pondage. Pakistan has included it in order to demonstrate the process by which the minimum mean discharge (“**MMD**”) is calculated for an Annexure D.3 HEP—which in turn provides the critical integer from which ,maximum allowable Pondage is to be derived.
3. The second part is **Appendix E2**, which converts the methodology, rooted in the interpretation of the plain words of the Treaty, that has been put forward by Pakistan for the calculation of maximum Pondage, into equations—for purposes of illustrating and supporting Pakistan’s proposed methodological approach in engineering practice. Again, it adopts as its testbed the Kiru HEP, using the MMD derived from the dataset provided in Appendix E1.

# **APPENDIX E1**

## Appendix E1

PAKISTAN'S CALCULATIONS OF MINIMUM MEAN DISCHARGE<sup>1</sup> AT  
INDIA'S 624MW KIRU HEP ON CHENAB RIVER

Year	Jan			Feb			Mar			Apr			May			Jun		
	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end
1975	62.2	60.7	47.9	51.2	42.2	55.3	55.3	61.1	78.3	104.1	119.2	173.4	236.2	457.8	553.4	653.9	980.6	1096.3
1976	57.7	53.9	56.2	49.2	61.7	60.1	68.9	58.7	71.5	90.2	114.0	226.2	249.1	394.2	557.5	967.5	685.9	600.9
1977	68.3	60.0	61.7	62.9	67.9	60.5	60.9	71.0	85.2	100.3	95.6	116.1	131.1	156.6	345.9	531.5	352.8	1472.5
1978	61.0	56.8	53.3	53.5	57.6	55.2	63.7	64.9	88.0	78.9	174.9	179.0	395.9	659.1	817.6	1097.7	965.8	1836.9
1979	65.8	63.0	64.1	60.6	60.3	59.8	37.9	55.4	135.8	147.3	193.0	278.7	308.5	294.5	278.9	401.7	847.2	1544.2
1980	61.4	62.0	53.6	56.3	55.0	59.6	59.1	60.8	73.8	83.3	114.5	164.8	276.9	294.9	396.1	725.5	905.5	1260.8
1981	65.0	59.0	57.1	62.3	60.5	63.9	64.6	63.8	81.7	101.0	174.8	265.7	505.7	530.8	722.2	482.8	530.8	1388.3
1982	63.4	61.6	65.1	64.5	60.2	61.6	68.0	66.0	79.4	93.9	130.8	163.8	275.6	216.3	346.7	567.3	942.1	785.9
1983	69.5	67.4	62.1	66.6	65.6	60.0	62.9	69.5	81.9	125.2	125.1	157.3	250.8	387.0	428.3	571.1	596.0	1181.3
1984	62.2	65.1	62.1	60.5	53.8	107.1	67.1	71.8	87.5	112.7	113.8	159.7	252.7	308.6	621.6	1201.5	1099.5	1174.0
1985	61.3	65.7	63.7	63.6	62.6	64.1	67.4	67.2	77.0	77.6	96.9	129.9	186.5	237.8	566.7	747.6	875.2	980.8
1986	68.7	64.7	61.9	61.5	59.7	60.3	69.6	73.5	93.0	96.0	155.1	211.9	254.0	450.0	287.7	391.6	968.0	1609.4
1987	77.8	74.9	76.8	71.8	71.5	74.1	88.9	89.8	99.1	119.8	119.8	205.8	203.4	212.2	398.1	762.5	678.5	970.1
1988	79.4	72.3	69.1	68.7	68.0	63.5	123.1	82.6	119.6	141.0	327.4	380.4	401.7	574.5	620.9	672.3	933.1	1726.8
1989	110.0	101.8	100.1	93.7	93.9	90.2	93.8	96.2	116.9	128.8	155.2	180.8	267.3	426.4	721.2	1215.9	861.0	1029.6
1990	80.9	80.3	79.7	76.6	82.9	81.7	75.4	88.8	102.6	117.7	164.4	221.5	399.4	919.4	845.2	764.0	749.4	1828.6
1991	71.5	68.6	66.7	65.5	63.9	68.5	85.2	96.6	124.2	169.8	143.4	201.1	284.2	440.7	409.0	937.5	1102.3	1049.0
1992	68.6	68.0	65.6	65.7	68.5	67.6	67.8	73.3	98.8	120.9	157.3	236.9	252.0	378.4	476.4	575.4	827.0	996.6
1993	83.4	77.5	71.8	71.3	73.9	65.5	69.3	82.6	89.4	106.6	141.5	233.1	409.9	N/A	N/A	N/A	822.4	932.5
1994	71.0	59.5	61.9	50.4	47.6	53.1	59.4	86.4	100.7	169.7	139.7	167.0	313.6	322.9	535.2	691.4	742.7	1091.9
1995	49.3	47.2	47.4	46.8	45.9	45.1	48.8	56.8	60.8	74.6	74.2	111.9	234.6	475.3	313.8	645.8	1016.8	702.1
1996	95.9	89.4	80.5	74.3	74.3	75.1	82.3	68.6	123.2	124.0	139.3	282.3	225.2	274.9	402.2	741.2	984.3	979.1
1997	86.1	83.8	82.1	80.7	76.2	72.4	74.0	77.9	80.6	84.9	98.5	146.4	181.4	204.7	261.3	304.0	361.1	474.4
1998	89.9	84.6	79.0	67.7	66.7	71.3	95.1	91.2	143.7	194.2	235.4	295.4	400.1	544.6	703.3	669.7	675.2	935.1
1999	106.0	98.1	92.3	80.9	75.6	74.9	79.6	85.7	108.2	164.0	184.1	250.5	219.9	275.1	383.5	359.6	472.5	592.1
2000	82.1	72.8	70.7	68.9	69.0	70.0	72.5	77.9	86.4	93.9	103.7	121.7	253.0	854.5	1270.6	653.0	627.4	732.1
2001	74.9	72.4	70.4	70.4	70.6	67.5	68.0	68.1	78.6	94.9	111.8	131.5	175.3	296.6	432.1	514.9	850.7	663.9
2002	115.1	114.3	74.0	60.7	61.2	67.7	74.8	99.2	141.7	158.0	201.3	229.1	288.6	649.5	676.5	835.5	970.5	1105.0
2003	77.0	76.0	71.0	68.3	65.5	64.1	70.4	67.7	94.1	166.5	191.5	300.1	492.5	729.4	829.9	1227.0	1122.8	1124.6
2004	99.0	98.2	97.4	100.6	110.7	78.5	76.7	84.2	97.7	140.1	144.8	173.0	172.1	293.8	394.6	393.4	842.4	660.2
2005	74.1	71.4	69.1	80.7	85.1	80.1	84.1	86.9	102.2	98.7	120.1	182.3	203.7	195.4	193.5	264.9	424.9	1529.9
2006	84.7	101.4	85.8	93.7	91.0	90.0	86.2	86.5	97.8	108.9	106.5	137.1	318.5	639.6	925.5	650.8	342.2	717.7
2007	71.2	66.7	64.4	49.0	45.7	43.1	74.9	76.3	N/A	160.9	248.8	332.6	493.6	607.4	392.0	498.6	936.8	1265.8
2008	57.8	58.2	58.7	53.5	52.3	59.2	70.4	75.3	72.9	78.6	107.0	138.4	208.5	410.2	493.2	723.4	1400.4	1127.5
2009	63.6	58.8	62.8	59.2	58.2	61.6	59.6	68.0	70.9	86.4	106.7	148.9	185.1	258.0	530.8	696.3	497.8	971.8
2010	67.1	60.2	56.2	47.9	63.6	69.7	69.5	79.3	112.9	113.7	173.5	192.9	421.7	360.4	583.3	681.6	575.5	1155.9
2011	62.3	58.0	59.9	50.6	36.6	51.5	61.1	73.4	101.0	95.2	151.9	272.6	511.2	711.8	852.1	794.5	1197.1	1548.0
2012	64.0	56.3	52.0	55.4	54.7	70.0	63.2	59.5	82.4	136.1	123.4	155.6	189.6	279.9	446.1	634.4	671.1	1134.4
<b>Mean</b>	<b>74.4</b>	<b>71.3</b>	<b>67.7</b>	<b>65.4</b>	<b>65.3</b>	<b>66.9</b>	<b>71.6</b>	<b>75.3</b>	<b>95.7</b>	<b>117.3</b>	<b>146.8</b>	<b>201.5</b>	<b>290.2</b>	<b>425.0</b>	<b>540.9</b>	<b>682.4</b>	<b>800.9</b>	<b>1104.6</b>

**MMD = 65.3 m<sup>3</sup>/s (reflecting second period in Feb)**

<sup>1</sup> India's provided daily discharge time series at Benzwar/Dul Hasti HEP was projected to Kiru HEP site using catchment area proportions.

**PAKISTAN'S CALCULATIONS OF MINIMUM MEAN DISCHARGE AT  
INDIA'S 624MW KIRU HEP ON CHENAB RIVER**

Year	Jul			Aug			Sep			Oct			Nov			Dec		
	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end	1 <sup>st</sup> to 10 <sup>th</sup>	11 <sup>th</sup> to 20 <sup>th</sup>	21 <sup>st</sup> to end
1975	923.5	1841.6	1171.4	1140.6	1458.0	1056.5	794.8	679.8	344.4	266.8	214.0	130.1	99.7	86.4	70.7	68.5	64.1	60.0
1976	1119.2	1590.1	1586.3	1155.8	1041.3	735.8	660.0	353.5	282.7	200.3	127.4	108.0	97.5	91.2	86.1	77.7	71.4	67.3
1977	1743.5	1571.6	1357.3	1576.2	1106.1	1003.3	861.4	485.3	286.9	193.0	138.5	124.5	101.6	85.1	79.5	77.2	76.2	70.4
1978	1870.4	1544.2	1590.6	1607.8	1419.8	1194.0	464.7	419.0	272.0	198.9	164.4	130.3	106.1	100.0	86.3	78.7	75.6	78.5
1979	1350.8	1723.9	1257.8	1597.4	1207.9	891.5	805.9	402.3	187.5	183.1	132.9	100.4	89.8	80.8	78.9	70.2	65.7	61.2
1980	1353.4	1568.2	1232.9	1418.4	804.4	877.8	550.9	378.2	272.8	236.7	153.5	113.6	98.3	89.5	80.8	74.4	70.8	53.3
1981	1091.6	1723.9	1898.3	1524.7	1311.4	855.4	615.1	322.2	300.5	156.5	128.6	111.1	105.1	91.0	81.7	76.4	70.1	63.4
1982	997.9	1098.1	1538.8	1718.7	1268.0	759.7	662.7	594.9	275.9	148.4	128.8	114.4	96.2	85.9	80.9	79.1	73.4	66.5
1983	1076.7	673.9	1671.6	1985.3	1482.4	1536.6	1191.1	724.0	427.6	308.5	206.1	124.5	108.7	96.8	83.0	77.2	71.6	68.6
1984	1058.7	800.4	1098.5	1285.4	1259.9	1036.8	702.0	439.2	184.4	126.3	114.6	109.9	96.5	86.0	80.9	76.7	72.4	66.5
1985	1142.8	1325.6	1199.8	1262.4	1141.3	1037.0	755.4	446.1	301.5	233.9	132.9	105.5	95.6	89.2	80.8	76.7	74.2	71.7
1986	1381.3	1491.5	1607.0	1443.8	1322.0	923.1	725.9	350.6	303.1	182.5	158.5	116.7	107.2	103.4	98.0	91.4	91.1	80.2
1987	1239.6	1220.1	1401.0	1111.2	1117.8	1231.9	970.1	643.0	469.0	265.8	200.1	131.5	120.6	108.2	99.4	93.3	89.3	87.1
1988	1603.5	1605.0	1685.4	1151.3	1050.8	670.5	632.4	561.8	673.6	331.0	215.2	170.4	144.8	123.9	118.0	104.6	94.6	96.8
1989	1007.6	1445.7	1759.8	1012.3	1170.0	1042.3	595.2	594.9	401.2	283.6	203.5	172.9	150.2	131.6	112.2	98.5	90.2	79.8
1990	1727.0	1280.5	1211.8	1493.8	1070.7	988.5	829.3	557.7	401.3	229.8	177.8	129.0	112.1	103.6	87.4	77.7	68.2	64.9
1991	1429.7	1366.9	1292.8	1061.3	897.9	933.0	882.9	774.2	365.4	216.0	173.8	142.2	121.3	108.5	92.9	83.2	78.8	73.3
1992	838.4	1124.1	1239.7	1055.4	907.3	924.2	828.1	421.5	309.3	248.3	200.1	162.1	140.0	128.6	108.6	92.6	87.9	82.2
1993	1403.0	1217.2	891.1	895.6	763.7	730.0	707.9	516.7	316.0	233.5	205.8	N/A	N/A	N/A	105.2	99.4	90.8	84.5
1994	1177.3	955.8	853.2	813.1	780.8	638.2	643.7	455.6	276.6	224.2	183.2	141.7	95.7	80.9	74.5	67.9	60.9	57.9
1995	1039.8	1084.4	1449.6	803.2	874.3	660.7	621.3	447.5	389.5	358.5	326.8	271.7	233.3	158.5	122.5	103.0	101.5	99.5
1996	756.9	746.9	762.1	855.6	836.1	800.3	583.2	464.1	400.3	346.1	209.6	134.2	126.7	120.2	104.9	96.7	92.2	88.8
1997	553.1	708.7	783.3	598.1	627.6	711.1	424.6	338.5	271.7	205.8	157.8	136.9	127.0	114.4	110.8	111.7	105.4	98.2
1998	1151.5	1167.9	1010.2	896.4	863.2	746.6	795.9	813.5	852.8	579.4	337.2	233.2	212.0	185.9	177.6	167.4	151.0	125.1
1999	773.8	1085.9	1245.2	1429.9	1154.7	1221.1	881.3	658.3	437.7	292.0	216.0	184.1	176.5	167.7	158.4	132.9	106.6	94.6
2000	823.1	988.9	1351.7	1374.5	933.9	945.9	773.7	527.2	360.4	291.1	229.8	219.5	193.4	145.1	125.2	101.8	88.2	80.5
2001	813.6	1152.1	1187.8	901.7	1109.8	825.7	587.9	470.0	393.8	321.1	212.7	192.3	170.3	151.1	139.1	131.9	130.2	122.3
2002	1262.2	1392.1	1330.7	1146.2	1146.5	1195.9	807.0	459.2	329.5	252.2	220.4	174.6	130.1	111.7	95.4	83.7	81.0	79.5
2003	1197.3	1261.7	1334.6	1144.0	972.7	717.0	641.6	457.7	358.1	169.1	139.0	128.5	108.1	98.9	102.1	98.2	99.7	98.7
2004	1111.0	841.0	774.0	795.1	960.9	644.2	537.9	628.5	237.6	196.8	146.4	108.3	89.7	69.0	74.9	71.0	69.0	68.3
2005	1259.6	1487.6	1411.4	1427.6	1101.9	814.3	985.2	285.4	139.9	123.5	111.8	105.3	104.4	95.3	96.2	94.2	95.0	90.3
2006	1341.0	1081.9	1380.5	1533.4	1114.8	961.8	585.5	397.1	195.9	145.8	131.2	106.3	117.4	122.1	88.6	89.6	88.3	78.0
2007	1086.3	941.2	1138.2	1096.0	1086.7	1023.8	753.3	419.4	288.7	149.8	116.7	101.6	96.3	82.9	76.1	67.0	63.1	58.4
2008	1222.5	1078.8	1108.6	1205.6	914.1	782.4	392.9	207.6	194.0	188.9	145.3	113.9	100.6	91.9	81.4	77.4	72.8	68.8
2009	935.6	1311.2	1204.8	1288.1	1222.5	786.0	488.1	251.5	193.5	187.8	148.6	113.1	94.9	98.1	86.5	80.3	75.3	68.0
2010	1228.6	1512.9	1927.6	2305.9	1891.5	1202.3	1202.7	589.9	332.2	202.7	172.0	145.9	110.3	96.1	86.0	74.0	66.8	68.5
2011	1240.9	1231.1	1447.0	1286.6	1053.1	1000.4	968.7	769.4	348.4	240.5	161.7	122.5	101.6	91.8	79.6	75.5	66.2	60.9
2012	1454.3	1364.7	1489.7	1475.9	1251.2	1301.4	1091.8	810.2	259.4	194.5	125.9	101.5	89.6	78.6	72.0	N/A	N/A	-
<b>Mean</b>	<b>1178.6</b>	<b>1252.8</b>	<b>1312.7</b>	<b>1259.8</b>	<b>1097.3</b>	<b>931.8</b>	<b>736.9</b>	<b>503.0</b>	<b>332.5</b>	<b>234.5</b>	<b>175.5</b>	<b>138.7</b>	<b>120.8</b>	<b>106.8</b>	<b>96.4</b>	<b>89.1</b>	<b>83.5</b>	<b>77.9</b>

**MMD = 65.3 m<sup>3</sup>/s (reflecting second period in Feb)**

# **APPENDIX E2**

## Appendix E2

CALCULATION OF PONDAGE REQUIRED FOR FIRM POWER UNDER  
ANNEXURE D, PARAGRAPH 8(C)TECHNICAL ANNEX

**Note:** *this Technical Annex walks through the computations and mathematical underpinnings relevant to the calculation of maximum allowable Pondage at the Kiru HEP on the Chenab Main, addressed in Chapter 11 of Pakistan's Memorial. The MMD data is derived from the data provided in Appendix E1.*

**E2.A Calculation of Firm Power**

1. Paragraph 8(c) of Annexure D provides that the “maximum Pondage in the Operating Pool shall not exceed twice the Pondage required for Firm Power”.
2. Firm Power is defined in Paragraph 2(i) as “the hydro-electric power corresponding to the minimum mean discharge at the site of a plant”.
3. Hydroelectric power is computed by multiplying the flow rate (m<sup>3</sup>/s) by the net generating head (m) by the efficiency of the turbine-generating units by the density of water (kg/m<sup>3</sup>), and the acceleration of gravity (m/s<sup>2</sup>).
4. The product of the five terms gives power, which is measured in Watts (W):

$$P = QH_n \varepsilon \rho g$$

5. The dimensions<sup>1</sup> of power are determined from the product of the dimensions of the components of the equation, which can be illustrated as follows:

$$P \left[ \frac{kgm^2}{s^3} \right] = Q \left( \frac{m^3}{s} \right) H_n(m) \varepsilon \rho \left( \frac{kg}{m^3} \right) g \left( \frac{m}{s^2} \right)$$

6. As expected, all dimensions of the parameters on the right side of the equation combine or cancel out to give the dimensions on the left side of the equation, which is the dimensions referred to as Watts in the International System of Units.

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<sup>1</sup> Dimensions refers to the units that describe a parameter, for example a length is described in meters and a flow rate as the volume (or cubic meters) flowing in one second.



7. Hydropower design normally reduces Watts to Megawatts (MW) by dividing the result of the above relationship by 1,000,000.
8. So far as the various components of the Firm Power equation are concerned:
  - 8.1. The flow rate is simply the flow from the watercourse that is discharged through the HEP's turbine.
  - 8.2. Net generating head refers to the difference in water level from the head pond to the tail pond minus any energy losses that occur through the water conduits. Energy losses include the effects of friction and disturbances caused by entrance, trash racks, gate slots, bends transitions, and the outlet from the tailrace. These losses normally vary depending on the flow velocity through the conduits and are subject to optimization of the plant.
  - 8.3. Efficiency refers to the combination of the efficiency of the turbine, the generator, the transformers, and other minor electrical efficiencies up to the plant switchyard, where the output is transferred to the transmission system. Efficiency gives the percentage of the input energy that is converted to output energy.<sup>2</sup>
  - 8.4. Gravity may vary fractionally depending on elevation, but is broadly speaking always  $9.8\text{m/sec}^2$ .
  - 8.5. The density of water may also vary fractionally depending on elevation, but is broadly speaking always  $1,000\text{kg/m}^3$ .
9. The only parameter constrained by the Treaty is the MMD, which constitutes a fixed flow rate for the determination of Firm Power. India is free to optimize the design of the conduits to select the net generating head. The efficiency is dependent on the design of the turbine-generator units by India. The other parameters of gravitational acceleration and water density are natural parameters dependent on the HEP site.

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<sup>2</sup> For example, the turbine converts hydraulic energy to mechanical energy and the generator converts mechanical energy to electrical energy. The transformer converts the voltage of electrical energy. Modern turbine efficiencies are over 90% with the peak efficiency for a Francis turbine being about 94%. The generator efficiency is about 98.5% and transformers have a peak efficiency of about 99%. The sum of other electrical efficiencies is in the range of 99 to 99.5% depending on the plant arrangement. The overall efficiency for computation of the power from the plant is the product of these individual efficiencies, i.e. about 88 to 91% for the plant.

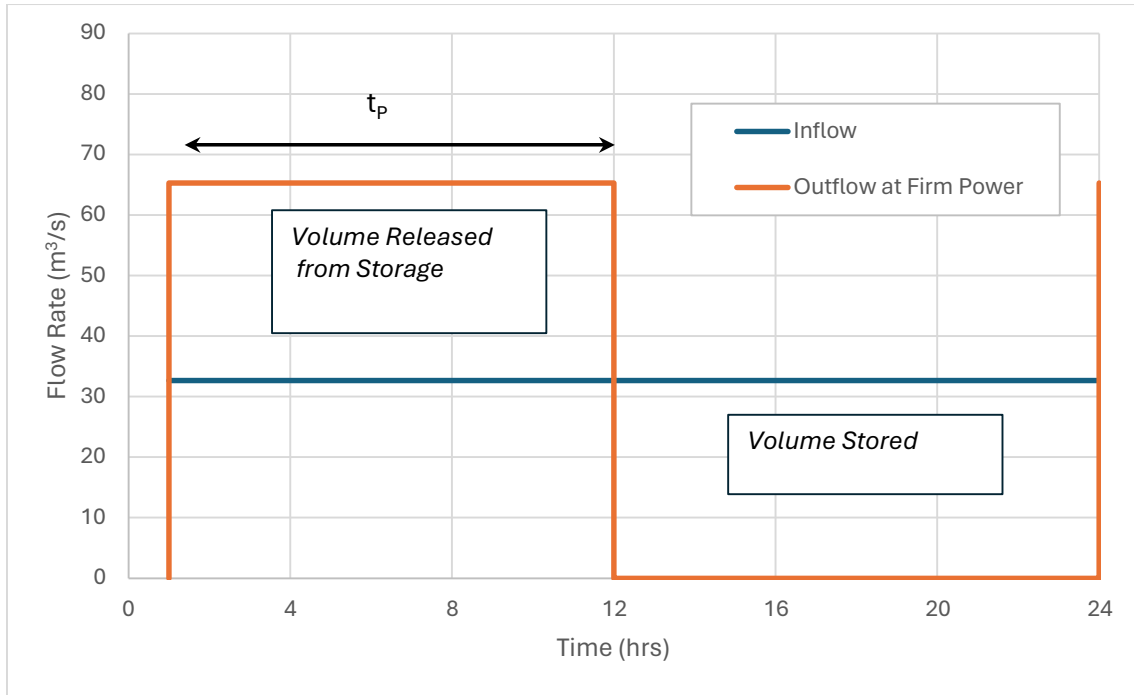
**E2.B Calculating Pondage required for Firm Power**

10. The computation required by Paragraph 8(c) determines the Pondage required so that the plant can deliver Firm Power on any given day.
11. If the river flow is greater than the MMD then the Plant can operate either continuously at a level above the Firm Power or for a shorter period at a higher output (which may be as high as the installed capacity), and no Pondage is required.
12. For any flow rate less than the MMD, computation of the Pondage is based on the Plant operating at Firm Power for part of the day with the duration of the operation depending on the actual inflow volume. Inflow volume can be computed as the product of the flow rate (Q) on a given day and the number of hours in the day. The number of hours of operation at MMD within the day can then be computed as:

$$t_p = \frac{Q \times 24}{MMD}$$

Where Q is the average flow rate in the day and  $t_p$  is the number of hours the HEP would operate with MMD discharge (i.e. at Firm Power).

13. This is a general result that shows that the number of hours generating will depend on the actual flow rate of the river on any given day, which is the expected operation for a run-of-river HEP.
14. The Pondage volume ( $V_p$ ) required for the Firm Power is computed from the balance of inflow and outflow in the day by recognizing that there must be a daily equivalence, as illustrated in Figure 1.



**Figure 1 – Illustration of Peaking Period**

15. If the HEP provides peaking for part of the day, then water is stored for the other part of the day and released during the peaking period. The volume of water inflow over the 24 hours of the day must equal the volume of water discharged during the peaking period.
16. The duration of the peaking period is denoted as  $t_p$  in Figure 1. The volume ( $V_p$ ) that must be stored to be used during the peak period can be computed as:

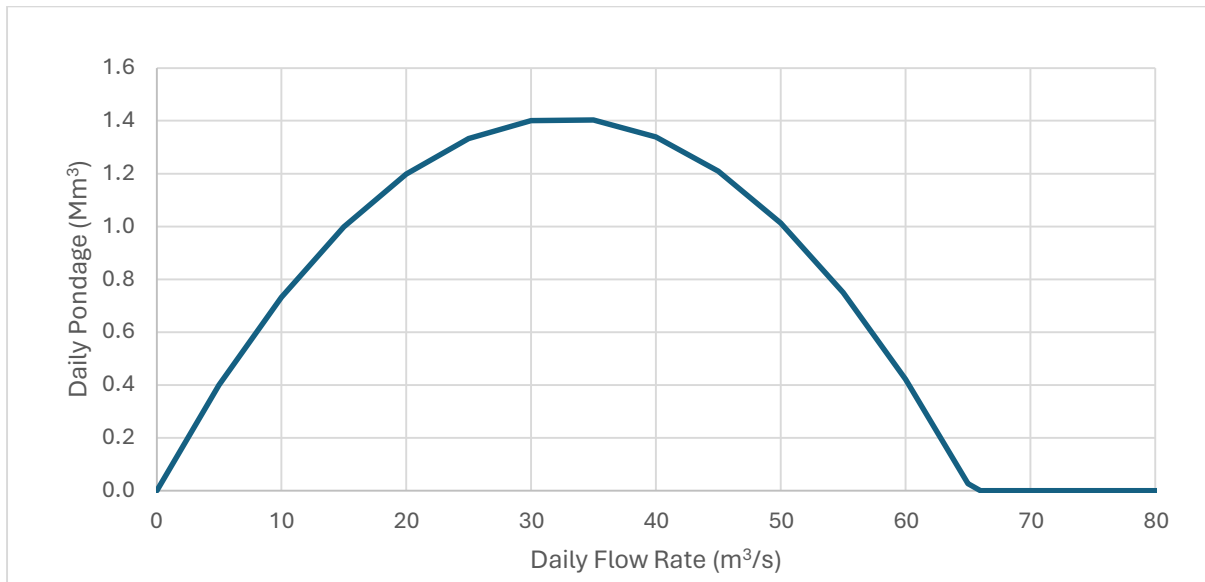
$$V_p = Q \times (24 - t_p) \times 0.0036^3$$

17. The computation required by Paragraph 8(c) determines the Pondage required so that the plant can deliver Firm Power on any given day.
18. The volume stored varies depending on the inflow available for use in the peaking. The rate of outflow during peaking is equal to the MMD for computation of the Pondage.
19. The amount of Pondage varies with the flow rate, as illustrated in Figure 2, which takes the Kiru HEP site MMD of 65.3 m<sup>3</sup>/sec as derived from the data in the table at **Appendix E1**. The curve in Figure 2 was computed by varying the inflow from zero

<sup>3</sup> The factor 0.0036 converts the result of a volume in m<sup>3</sup>/s-hours to a volume in million cubic meters (Mm<sup>3</sup>).

to 65.3 m<sup>3</sup>/s and computing the resulting peaking duration and storage volume using the two equations shown above.

20. The highest value reached is 1.41 Mm<sup>3</sup>, which is the Pondage required for Firm Power at the Kiru HEP site when determined through the full range of possible flow rates.
21. The Pondage required for Firm Power happens to be when the flow rate is equal to 50% of the MMD. In this case, the Kiru HEP operates at Firm Power for 12 hours of the day (i.e., 50% of the day) and would be idle for 12 hours while storing water in its Operating Pool.
22. The total flow volume released in this case would match the inflow volume and the volume stored as Pondage would be the greatest among all possible inflow rates.



**Figure 2 – Daily Pondage Calculation for the Kiru HEP  
(derived from the data at Appendix E1)**

23. The maximum Pondage illustrated in Figure 2 can be calculated by substituting the formula for  $t_p$  into the formula for  $V_p$  as follows:

$$V_p = Q \times \left( 24 - \frac{Q \times 24}{MMD} \right) \times 0.0036$$

24. This equation can then be reduced by reorganizing the terms to produce the following:

$$V_P = \left[1 - \frac{Q}{MMD}\right] Q \times 24 \times 0.0036$$

25. The calculation of the maximum is obtained mathematically by noting that the equation for the Pondage volume has the form of a quadratic equation.
26. The differential<sup>4</sup> of this equation can be computed to show the point where the slope of the curve is equal to zero, which will be the maximum value of the Pondage ( $V_P$ ):

$$\frac{d V_P}{d Q} = \left[24 - 2 \times 24 \frac{Q}{MMD}\right] \times 0.0036 = 0$$

27. This equation reduces to:

$$24 \times 0.0036 = 2 \times 24 \times 0.0036 \frac{Q}{MMD}$$

28. The terms on both sides of the equation cancel each other to arrive at the final result:

$$Q = \frac{MMD}{2}$$

29. This result confirms that the maximum Pondage in Figure 2 is obtained when the flow rate is equal to 50% of the MMD. Note that the formula for  $t_p$  confirms that the maximum Pondage will occur with peaking for 12 hours in the day if the flow rate is 50% of the MMD.
30. The resulting Pondage is then computed using the formula for  $V_p$ , giving a value of 1.41  $Mm^3$  for an MMD value of 65.3  $m^3/s$ .

### E2.C Calculating the size of the Operating Pool

31. Paragraph 8(c) limits the maximum Pondage in the Operating Pool to a value equal to twice the Pondage required for Firm Power. The Pondage determined as outlined above is, therefore, multiplied by a factor of two to give the maximum Pondage.

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<sup>4</sup> Differential refers to a procedure from calculus to compute the slope of a tangent line from a mathematical function. The equation for Pondage is in the form of a quadratic equation that would plot as a curve, as show in Figure 2.

32. Taking the value for  $V_p$  above, the maximum Pondage in the Operating Pool for a HEP, such as the Kiru HEP, where the MMD is  $63.5\text{m}^3/\text{sec}$ , is  $2.82\text{ Mm}^3$ .