

EQUITABLE SHARING OF THE GANGES UNDER THE AGREEMENTS BETWEEN BANGLADESH AND INDIA

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1.Introduction

The Ganges case represents a classic example of how contentious the question of equitable sharing of the waters of an international river can be, especially when the available waters of that river fall far short of the requirement of basin states. The problem was seriously charged with the Farakka barrage project, construction of which was completed by India in 1972. The project was undertaken to divert major portion of the dry season flow of the Ganges to the Bhagirathi-Hoogly tributary in order to rejuvenate Calcutta port, situated in the West Bengal state of India¹. Bangladesh, the downstream country, objected the project apprehending drastic reduction in the dry season water flow needed for her irrigation and other economic uses and environmental protection.² The legality of the project of diversion was challenged long before in 1954, ever since it came to the knowledge of Pakistan, of which Bangladesh was a part before her liberation in 1971.³

The contending countries took many years to accept each other in 1974 as co-users of the dry season flow of the Ganges.⁴ Their primary acceptance of the applicability of the principle of

¹For a factual account of earlier stages of the dispute, see Crow, B., 1980, *The politics and Technology of Sharing Ganges*, PhD thesis, University of Edinburgh. Abbas, B.M., *The Ganges water Dispute*, Dhaka, UPL. Sarma, S.S.(ed), 1986, *Farakka- A Gordion Knot*, Calcutta, Ishika. Zaman, M. (ed), 1983, *River Basin Development*, Dublin, Tycooly International.

²White Paper on the Ganges Water Dispute, 1976, Government of Bangladesh, pp. 6-10. See also, *Deadlock on the Ganges*, 1976, Government of Bangladesh, p.p.2-4.

³Statement of the Delegate of Pakistan, GAOR, 23rd Session, 1681 Mtg., 4 October, 1968, p. 11.

⁴Text of Joint Declaration of Prime Ministers of India and Bangladesh, New Delhi, 16th May, 1974, in 'Documents', 1990, Government of Bangladesh, Ministry of Irrigation, Water Development and Flood Control, The Indo-Bangladesh Joint Rivers Commission, Dhaka, pp. 1-4.

equitable utilization led to the conclusion of some temporary arrangements for sharing the Ganges dry season flow for 11 years between 1977-88. However, they underscored that a permanent solution lies in augmenting the dry season flow of the Ganges and assigned a Joint River Commission (JRC) to study that question. After many years of consultation, the Commission, being handicapped with institutional weakness and subordination to political will of two Governments, failed to reach accord on the most sustainable method of augmentation.⁵ Bangladesh's experts in the JRC proposed a regional arrangement involving Nepal for building reservoirs in the Ganges's headwater.⁶ India experts singled out bi-lateralism and suggested to meet the shortage in the Ganges by transferring water from the lower part of the Brahmaputra by a link canal through Bangladesh.⁷

The disagreement on method of augmentation jeopardised the future of sharing when after 1988 India continually refused Bangladesh any ensured amount of water, unless Bangladesh accepts her proposal on augmentation of the Ganges.⁸ This uncertainty in water supply placed significant constraints upon existing uses as well as large scale water resource planning and development in Bangladesh. Being free of any such constraint, India undertook increasing number of large scale irrigation and hydroelectric projects in the upstream of the Ganges basin, some in co-operation with Nepal.⁹ These were alleged to have worsened downstream effect and seized river development options in Bangladesh. The acute urgency of the question of

5For detail, Crow, B. And Lindquist, A, 1990, Development of the River Ganges and Brahmaputra, Development Policy and Practice Research group, DPP working paper no. 19, British Open University.

6Proposal for Augmentation of the dry season flow of the Ganges, 1978, Government of Bangladesh, Ministry of Water resources and Flood control. Updated Augmentation proposals for augmentation of the Ganges, 1983, Government of Bangladesh, Ministry of Water resources and Flood control.

7Proposal for Augmenting the Dry Season's flow of the Ganges, 1978, Government of India, Ministry of Agriculture and Irrigation. Updated proposals for Augmenting the dry season flows of the Ganges, 1985, Government of India, Ministry of Irrigation.

8N. 5 p.32.

9 Ibid, p.6. See also, The Impact of Farakka Barrage on Bangladesh, 1994, Government of Bangladesh.

sharing overshadowed other issues like regulation of pollution or sustainable development, which formed major parts of the developing principles of International River Law.

Against this backdrop, the conclusion of the treaty on the river Ganges between Bangladesh and India on December 12, 1996 merits to be considered with added importance.¹⁰ This treaty is basically concerned with the sharing issue, aiming at ensuring both countries an 'equitable' quantum of dry season flow of the Ganges for thirty years. Given that the prospect of sustainable or even optimal utilisation through augmentation is largely ignored in the treaty, its success has predominantly been confined to the efficiency of its sharing formula for a allegedly diminishing flow. This is why despite the euphoria following the conclusion of this treaty, concerns over the workability of treaty had also been aired in both of the countries. It was even submitted that the treaty, comparing to previous temporary arrangements, lacks some in-built provisions to ensure equitable sharing particularly for the downstream country.¹¹

This article focuses on the sharing arrangement of the 1996 treaty along with the previous ones between Bangladesh and India to assess their experience of equitable sharing. The primary purpose of this study is to examine the efficiency of the present sharing arrangement, claimed to be an equitable one by the contracting parties.¹² The examination is particularly important considering that the contending countries have, for a long period, disputed not on the applicability of the principle of equitable utilization but on how the vague standards of the

¹⁰The treaty is entitled, 'Treaty between the Government the republic of India and the Government of the People's Republic of Bangladesh on sharing of the Ganga/Ganges water at Farakka'. For text of the treaty, see, *The Daily Star*, 14 December, 1996.

¹¹ *Infra*, n.56, 60 .

¹² While negotiating the treaty, concerned Ministers of both of the states submitted that they were looking for a solution in line with 'fair and equitable' distribution. See, *The Hinduistan Times*, 12-11-96. In a joint press conference, after conclusion of the Treaty Prime Ministers of both of the states addressed the treaty as 'fair and just' to both of them. See, *The Times of India*, 13-12-96. For Indian Prime Minister's similar comment made in the Lok Shava, Lower House of the Parliament of India, see, *The Hinduistan Times*, 13-12-96.

principle be applied in sharing limited water resources of an international river. It addresses the constraints a weaker downstream country faces or might face in negotiating a flexible principle like equitable sharing.

2. The concept of accommodation

The preamble of the 1977 agreement addressed the sharing arrangement, enshrined therein, as being concluded in a spirit of 'mutual accommodation', - an expression which reflects the essence of the principle of equitable utilisation¹³ The agreement represented the accommodating attitude of two states on the question of augmentation issue also. The process of accommodation can be discerned by comparing some of their claims put forward during the period of India's unilateral withdrawal and relevant agreed provisions in the 1977 agreement, as shown in the following table.

Claims based on convenient factors		adjustment in 1977 agreement
India	Bangladesh	
For allocation of water, lean season was a period of two months extending from mid-March to mid-May	water should be allocated for a period of seven months extending from November to May	allocation of water was made for a period of five months extending from January to May, Which were defined as lean months

¹³The report of the International Law Commission on the law of Non-navigational Uses of the International Watercourses explained that in cases of conflict of uses, the principle of equitable utilization requires an adjustment or accommodation of the uses on the basis of equality of rights of the concerned basin states. See, para 9 of the Commentary on Article 5, Doc. A/49/10 reproduced in Environmental Policy and Law, 24/6, p.341.

India, in the driest periods required at least 40,000 cusecs, leaving approximately 15,000 cusecs for Bangladesh	Bangladesh was entitled to the whole dry season flow which was at least 55,000 cusecs in the driest period	India's share in the driest period of ten days of April was fixed at 20,500 cusecs and Bangladesh's 34,500 cusecs.
Nepal could not be included in any Planning of augmentation	Planning of Augmentation must include Nepal	Study on augmentation would not exclude scheme/schemes for building strage in Nepal

1977 agreement was, therefore, formed of two major components-first: sharing of existing flows and second: studying the augmentation proposals. The accord on augmentation issue, however, fall far short of comprising any positive obligation and merely recorded an understanding that the JRC would investigate and study the augmentation proposals of two countries in order to facilitate future agreement on this question. The legal regime actually established was a mere 'interim' sharing arrangement enshrined in the 1977 agreement.

2.1. Sharing arrangement in 1977 agreement

While negotiating the sharing of the dry season flow of the Ganges, the primary point to be settled between India and Bangladesh was the amount of water availability at 'Farakka', a place agreed to be the point of apportionment back in 1968. Settlement of that question was particularly important because water availability at Farakka had already been threatened by some projects completed or undertaken by Uttar Pradesh (UP) and Bihar, two states of India situated upstream of Ganges or by India and Nepal jointly. In an official 'Statement' published by the Ministry of Agriculture and Irrigation of the Government of India, and circulated to the members of Lok Shava, the lower

House of the Indian Parliament in 1972, it was clearly suggested that the lean season flow of the Ganges from mid-March to mid May had not yet been affected only because the upstream projects on three major tributaries of the Ganges 'have not yet come into full use'. The three projects, as addressed in the 'Statement', were Sarda Assist Project of 1968, a project concerning Sarda, (tributary of Gangara), Gandaka project of 1958, undertaken with Nepal and Kosi project of 1956 of which western Kosi canal was undertaken with Nepal.¹⁴ Though India refused to include issues concerning projects of upstream withdrawal in negotiations leading to the 1977 agreement she conceded to Bangladesh's proposals for a sharing arrangement which aimed at protecting the downstream country from arbitrary upstream diversion. The arrangement was worked out by agreeing a fixed water availability, specified amount of share and a guarantee clause for protection of a substantial part of the downstream state's share.

A) water availability: water availability was fixed, as Bangladesh proposed, for three ten-days periods of specified months on the basis of historic flows at Farakka from 1948-73.¹⁵ The historic flow was agreed to be based on 75% availability calculated from the recorded flow of the Ganges at Farakka from 1948-73, so that the possibility of lower flow can be assumed by statistical range of variation. B.M Abbas, an eminent water expert and one of the key negotiator for Bangladesh Government, explained the significance of this provision by arguing that "unless India agreed to this basis, the agreement would be rendered negatory as India would gradually change the pattern of flow at Farakka through

¹⁴ During Lok Shava debate, the Union Agricultur and Irrigation Minister, however, denied that other projects-described by one member of Lok Shava as -34 major and 170 minor irrigation projects sanctioned even in the teeth of the opposition of West Bengal'-would have any affect on Farakka. He explained, 'save Gangara GandakaKoshi, other rivers have little discharge during the lean months'. For detail, see, Lok Shava Debate, 5th session, 5th series, Vol. XVIII, No. II col. 321,322. 334, 335.

¹⁵Art. II of the 1977 agreement

¹⁶Abbas, n.I, p.80

upstream use of the river flow".¹⁶

B) Sharing : the sharing formula had been worked out on the basis of fixing Bangladesh's minimum share at 34,500 cusecs out of 55,000 cusecs, the expected availability in the driest 10-days period of 21-30 April and sharing the excess in other ten-days periods proportionately.¹⁷ This corresponded with the final requirement of Bangladesh's GK project, submitted by her predecessor Pakistan in 1968 and thereby appeared to reflect the weight, two states might place on the principle of not causing harm in determining equitable shares.¹⁸ It also protected Calcutta Port's interest, by ensuring at least 20,000 cusecs of water in the driest period of Mid March to Mid-May, which was addressed as her actual requirement in the original plan of diversion.¹⁹

C) Guarantee for a minimum share: the most significant provision of the agreement was the guarantee clause whereby an effective obligation was imposed on India to protect a substantive portion of Bangladesh's stipulated share. The clause provided that if the actual availability of the Ganges flows at Farakka was lower than the figures calculated on the basis of historic flows, there would be a pro-rata adjustment of the sharing, but that release to Bangladesh would never be reduced below 80 percent of her stipulated share.²⁰ This in one hand imposed an understandable sacrifice on Bangladesh to waive

¹⁷Schedule annexed to the 1977 agreement

¹⁸The Ganges- Kobadak Irrigation Project Known as G.K. project was undertaken to irrigate the south western region of Bangladesh by lifting water through an intake channel from the Ganges. phase I of the project became operational in 1962 and its construction was completed during the period 1955-70. Construction of phase II was initiated in 1960 and completed in 1984. For detail, see, Bangladesh Water Development Board; Consultancy Service for Feasibility Study of Floating Pump Station in Ganges-Kobadak Project, Draft Final Report, Bureau of Research, Testing and Consultation, BUET, Dhaka' July, 1996.

¹⁹'The Ganga Barrage project' prepared in 1959, sanctioned by the Government of India in April 1960, made provision for running the feeder canal, for two months- mid-March to mid-May, with lesser discharge upto 20,000 cusecs.' Lok shava debate, n.14, col. 320

²⁰Analysing the Guarantee Clause, Tariq Hassan commented that, 'Bangladesh's share under the Ganges Water treaty has been adequately protected'. Hassan, T. 1978, 'Ganges Waters Treaty', 19 Harv. ILJ, p.715.

her 20% in cases of lower flow and on the other hand protected her from absolute uncertainty which might be caused by excessive upstream diversion. Like the sharing formula, the guarantee clause reflected India's admitted obligation of protecting existing uses in accordance with the principle of equitable utilisation.²¹

From the above points, it can be argued that the underlying principle of the sharing arrangement was defining and protecting a substantial part of Bangladesh's existing use of Ganges water. While doing so, India and Bangladesh did not feel it relevant to protect the share of Calcutta port from the expansion of upstream irrigation, which in essence, was a question of distribution of the waters between different states of India.

2.2. Redistribution of the burden of less now

As explained in the above discussion, the success of the 1977 agreement was dependent mainly on two issues- in case of sharing, on the expected water availability at Farakka and in case of augmentation, on the joint study of the proposals of two states. The experience in its implementation can be summarised as follows:

First: in the absence of any provision for addressing the issue of upstream diversion in the 1977 agreement, it was proven during the tenure of the agreement that the historic flow calculated on the basis of flows from 1948- 1977 did not represent the actual situation. Water availability at Farakka was found to be significantly less especially from the 1980 dry season. Consequently, Calcutta suffered from receiving a substantial less amount of water while due to guarantee clause Bangladesh's share was almost protected.²² India's new

²¹The Farakka Barrage, n.13, col. 22.

²² As for example, as The Hinduistan Times reported, Calcutta port received 11,166 cusecs between March 21-31 1980. The shortfall is believed to be lesser water availability than the estimated one. The actual value was 40,036 cusecs against an estimated value of 61,000 cusecs. The Hinduistan Times, July 14, 1980.

Government in 1980 appeared to ignore the impact of upstream diversion while maintaining that Calcutta's suffering had resulted from the provision of guaranteed share for Bangladesh.²³ In this circumstances, as expressed in the review meeting, India insisted on redefining the sharing arrangement arguing that Bangladesh and India (more correctly Calcutta) had to redistribute the burden of less water availability at Farakka. On the other hand, Bangladesh, while requesting an extension of the 1977 agreement in accordance with article XV of the agreement, appeared to be more interested to avoid the uncertainty posed by upstream diversion. But as India strongly objected to the extension of 1977 agreement, Bangladesh had been propelled to prepare herself for a different sharing arrangement.²⁴

Second: in the context of diminishing flow at Farakka, the necessity of augmentation took a new dimension. It was no more only to increase water flow at Farakka, which in 1974 was addressed to be insufficient for Bangladesh and Calcutta, but also to make good the loss caused by the upstream diversion. In this context India's proposal of Ganges- Brahmaputra link canal was viewed by Bangladesh as a device to transfer Brahmaputra water to compensate the water deficiency caused by upstream diversion. This together with India's refusal to include Nepal to study Bangladesh's proposal jeopardised progress in studying augmentation proposals.²⁵

The influence of these experiences was very much visible in the subsequent 1982 and 1985 Memorandum of understandings (MOU), concluded for the short term sharing of the Ganges. The MOUs defined the principle of equitable sharing as

²³How strongly India defended the upstream diversion projects is well manifested in her pledge that 'the interest of the upstream projects would be fully safeguarded' irrespective of their probable effect on Farakka. See, n. 22, Col 321,322, 324

²⁴The impact of Farakka Barrage on Bangladesh, 1994, Government of Bangladesh, p. 10. see also Sing, K., 1990, *India and Bangladesh*, New Delhi, Anmol, 160-161

²⁵For detail, see, Begum, K., n. 20, P. 191-219.

redistributing the sacrifices imposed by inadequate water availability at Farakka. The MOUs, therefore, substituted the guarantee clause of the 1977 agreement with a provision which stated that in case of exceptionally low flow, two countries would hold immediate consultation to decide 'how to minimise the burden to either country'.²⁶

In situations other than that of exceptional low flow, the MOUs, however followed an identical sharing arrangement based on the same water availability as it was in the 1977 agreement. But due to substantial decline in the water availability at Farakka, this sharing arrangement lost its workability in the following dry seasons, for which two countries had to conclude agreements in accordance with the MOUs to share 'exceptional low flow'. The agreements defined 'exceptional low flow' as a flow which is less than 75% of the expected flow, calculated on the basis of 75% dependability of the historic flows from 1948-1973. The agreements granted Bangladesh a pro-rata release of the Ganges flow at Farakka when the available flow is upto and above 75% of the expected flow. In case of less than 75% of the expected flow for the corresponding ten day period, the agreements provided for calculating the 'burden' by deducting the pro-rata release for Bangladesh at the actual flow from the pro-rata release at 75% of the expected flow and then sharing that burden by both states on 50:50 basis.²⁷ So, by deleting the guarantee clause, these agreements, in effect, provided for redistributing the burden of residual flow of the Ganges reaching at Farakka after upstream withdrawal. Calcutta's share was more protected in the new arrangements comparing to the 1977 agreement. Bangladesh, on the other hand, conceded to

26 Indo-Bangladesh Memorandum of Understanding, New Delhi, October 7, 1982 and Indo-Bangladesh Memorandum of Understanding, New Delhi, November 22, 1985 in 'Documents' n. 4, pp, 28- 33.

27 Agreement on Sharing of Exceptional Low Flow at Farakka for 1983-84. Agreement on Sharing of Exceptional Low Flow at Farakka for 1985-88, n.4, pp.30, 35.

28 An illustration of the impact of the new arrangement was provided by B.M Abbas. This illustration says that 'the Ganges at Farakka recorded an all time low flow on April 5, 1983 against an expected availability at 75% of 59,000 cusecs. Out of its scheduled share on this day of 35,000 cusecs, Bangladesh received only 24,425 cusecs. Under 1977 agreement Bangladesh would have got 80% of that 35,000 cusecs that is 28,000 cusecs. Abbas, n 1, p. 115

share the burden of lower flow, which Calcutta had to shoulder previously.²⁸

The MOUs also aimed at speeding up the study of augmentation proposals by evading the question of political implications of the link canal proposal of India. The JRC had been "directed --- to ensure that a full and final agreement is arrived at" by focusing on economic and technical aspects.²⁹ After JRC's failure, the 1985 MOU established a new body called Joint Committee of Experts (JCE) consisting of secretaries concerned of the two Government and two engineer member of the JRC from each side, to work out a long term scheme or schemes for the augmentation of the Ganges at Farakka. It was agreed that after completion of the JCE's study within 12 months, a summit level meeting would take a decision on the scheme of augmentation and also the long term sharing of not only the Ganges but also all the rivers common to both states.³⁰

Implementation of the MOUs and corresponding agreements, however failed to generate any optimism in regard to sharing or augmentation. As the actual availability of water was found to be less than 75% of the expected flow in the driest ten-days periods, both Bangladesh and Calcutta port had to suffer by receiving less water. As regards augmentation, inspite of the new directives and institutional framework, the stalemate on studying augmentation proposals continued due to the disagreements on Nepal's participation in the study of augmentation proposal of Bangladesh.³¹

29Para 12 of the Joint Communiqué of 7 October, 1982 mentioned in Crow. B., 'Appropriating the Brahmaputra, Onward March of India's Rich Peasants, the economic and political weekly, Dec 25, 1982, 2097-98

30The 1985 MOU, n.26, pp 31,32

31 Circumstantial evidences suggest that steps had already been taken or seriously considered by 1985 to decline Bangladesh's involvement in any tri-lateral project of additional storage in headwaters of Ganges. In her updated augmentation proposal submitted to Bangladesh, India advocated the policy of undertaking bi-lateral projects with Nepal by arguing that additional storage in Nepal [which precisely was proposed by Bangladesh] would not be sufficient to meet her own need for Ganges water which 'are so urgent and so large'. See Updated Augmentation Proposal, n. 7, p. 47, 54, 56

India later reached understandings with Nepal during the official visit of Nepal's Prime Minister to India from 5-10 December, 1991 and subsequent visit of the Indian prime Minister to Nepal from 19-21

2.3. Limitations of short term arrangements

The series of sharing arrangements, addressed or appeared to be concluded for equitable sharing of the Ganges, failed to bring about any genuine solution and after the expiration of the last MOU in 1988, India, until 1996, refused to enter into any more sharing arrangement. Some fundamental flaws of the short term arrangements, as experienced during their operation, can be traced before discussing the efficiency of the sharing formula of the 1996 treaty.

In regard to sharing, it was proved that the short-term sharing arrangements, by evading the reality of upstream diversion, had made only partial accommodation or adjustment of the competing uses. These arrangements even failed to make provision for exchanging data concerning upstream diversion, although this diversion was very likely to affect water availability at Farakka and thus any sharing based on water flow at Farakka. In such situation, as experienced through the operation of the guarantee clause of the 1977 agreement, the interest of downstream country could be effectively protected only by giving due regard to the principle of not causing serious harm. When that guarantee clause was deleted in the subsequent arrangements, an efficient system for providing data in regard to upstream diversion became more imperative. The existing monitoring machinery stationed at or below Farakka was hardly equipped to answer how the projects of upstream withdrawal were affecting water availability at Farakka. Consequently it became very difficult for the downstream state to plan even her immediate water-uses.³² The situation turned worse for Bangladesh, when after the expiration of the 1985 MOU in 1988, India refused to conclude any more sharing arrangement, claiming that water flow at Farakka could not be shared unless Bangladesh acceded to her augmentation

October, 1992, in regard to a number of multipurpose projects which were earlier proposed by Bangladesh. See, *the Impact of Farakka Barrage on Bangladesh* n.9, p.22

³²*The Impact of Farakka Barrage on Bangladesh* n.9, pp. 10,12.

proposal. This experience revealed the vulnerability of a downstream state unless her interest was protected against unlimited upstream diversion and she was afforded a scope of having information as to that diversion.

In regard to augmentation issue, the decade old stalemate over the study of augmentation proposals exposed the necessity of an efficient dispute settlement procedure incorporating provision for third-party involvement' which was proved to be decisively successful in case of another hot spot of water dispute between India and Pakistan regarding the Indus river.³³ Agreements on Ganges between Bangladesh and India failed to incorporate provisions for third party involvement in dispute resolution even to the extent it had been done in water treaties where India is party as a downstream state, with Nepal and Pakistan.³⁴ Her agreements with Bangladesh merely provided for bi-lateral efforts, which were found to be insufficient to settle many disputed questions concerning water utilization particularly augmentation proposals. In the 1977 agreement the responsibility of dispute settlement was assigned to the JRC and in case of its failure, to the states themselves. But the JRC had hardly been intended to be established as an independent body with any decision making freedom.³⁵ The establishment of JCE under the 1985 MOU also failed to make any substantial advancement on this issue. Along with the efforts of technical

33For detail see, Baxter, R.R., *The Indus Basin*, in Garretson R.R. and others (ed), *The Law of International Drainage Basin* 1967, New work, Oceana, pp.444-478.

34As for Example, Art. IX regarding Arbitration in Indus Waters Treaty, 419 UNTS p. 127, Art 12 of the Agreement on the Gandaka project, Art. 14 of the agreement on Kosi project. UN Doc. ST/LEG/SER.B/12, 1963, pp.290-295.

In Art 11 of a recently concluded treaty between India and Nepal regarding projects on Mahakali river, provision is made for recouring to the Parmanent Court of Arbitration in cases where two states fail to agree on nomination of a third arbitrator.

35 One obvious proof of political influence on the JRC can be traced from an earlier Indian plan where link canal was assessed as an inevitable part of a strategy designed for overall development of the water resources of India. K.L. Rao, India's Irrigation Minister during early 70s, revealed that "Actually it [the Ganga-Brahmaputra canal] is one of the projects which we think is all very vital, but so far we have not come out with execution, because we have to clear the problem of the Bangladesh region through which the canal passes'. --- In fact it is in the interest of the Ganga-Cauvery link that the Brahmaputra link must come". Lok Shava debate, n.14, col. 342,343.

bodies, several political meetings of two states even at the highest political level was also convened with no progress and in the beginning of 90s, the contending states appeared to abandoned the study on augmentation proposals. All these, taken together, suggested the need for a procedure of third party involvement, which could have been invoked after failure of bi-lateral efforts.

Finally it has to be noted here that all these sharing arrangements discussed above were temporary in nature and contained a common pledge that a final sharing would be negotiated basing on an agreement on the method of augmentation of the Ganges. Their great importance lies in their demonstration of the practical constraints the states faced in actual sharing of the waters. These constraints are very important to be noted, given that the later treaty of 1996 is basically a sharing arrangement of the existing water for thirty years. Unlike previous arrangements, the treaty ventured to demonstrate how existing water can be shared barring the possibility of augmentation.

3. 1996 treaty and its implementation

The text of the 1996 treaty makes provision for sharing only, although the need for augmenting the Ganges flows is recognised in the preamble. The preamble, like that of 1977 agreement, addresses the sharing arrangement as one concluded in a spirit of mutual accommodation. In the case of 1977 agreement that accommodation was meant to be an adjustment of the competing claims made for a water flow, which had so far been largely undisturbed by upstream diversion. In latter case the accommodation, as the preceding discussion reveals, ought to have been of the competing interests (of Calcutta port and Bangladesh) in a diminishing flow. The uncertainty of that accommodation is reflected in a unique sharing arrangement which is based on hypothetical availability of water.

The sharing formula in the 1996 treaty is based on the possible

availability of average flow of the period from 1949 to 1988. Accordingly, when water availability is more than 75,000 cusecs, which, as Annexure II of the treaty shows, is expected to be during January, February and last 10 days of May, India is granted her full requirement of 40,000 cusecs water and Bangladesh the rest. In case of water availability between 70,000-75,000 cusecs, expected during 1st 10-days of March and 2nd ten days period of May, Bangladesh's share is 35,000 cusecs and India's the rest. In the crucial period of 10 March to 10th May when even the expected water is less than 70,000 cusecs, the flow at Farakka is agreed to be shared on 50:50 basis.³⁶ This has been worked out by making provision for guaranteed 35,000 cusecs water for each country and the rest for other in alternative three ten-days periods during 10 March to 10 May. This provision, however, would not apply in cases of below 50,000 cusecs water availability, where, as the treaty provides, India and Bangladesh 'will enter into immediate consultations to make adjustment on an emergency basis, in accordance with the principle of equity, fair play and no harm to either party'.³⁷ On analysing these provisions some important features of the sharing arrangement can be noted.

First: the treaty has redistributed the share of Calcutta and Bangladesh in the dry season flow of the Ganges water. As a whole the agreement has changed the proportion of distribution in favour of India. Comparing to 40.94 percent share of India in the 1977 agreement, the 1946 Treaty has allocated 47.46 per cent share to India.³⁸ The new arrangement becomes more onerous for Bangladesh in drier periods during 10 March to 10 May when two states had to share the lower water on 50:50 basis whereas in all other previous arrangements, in case of

³⁶Para (i) and (ii) of Art II, Annexure I and II of the 1996 treaty

³⁷Para (iii) of Art. 11 of the 1996 Treaty

³⁸ See *infra*.

³⁹ Under 1977 agreement, Bangladesh was granted at least 11,000 cusecs more water than India for each ten-days period during 10 March to 10 May. Same figures of allocation was retained in the 1982 and 1985 MOUs.

expected availability Bangladesh's share was considerably more than that of Calcutta.³⁹

Second: though the proportion of Bangladesh's share was reduced, Annexure II, addressed as an indicative schedule in the treaty, looks to be allocating both of the states more water comparing to previous arrangements. This allocation, however, essentially depends on the expected water availability calculated on the basis of average flow from 1948-88. If actual availability corresponds to the average flows of the period 1949-1988 then only both of the states would receive their allocated share, shown in the Annexure II.

Third: the applicability of the treaty has been made limited by providing that in case of availability of below 50,000 cusecs water, the treaty would have no relevance except in providing for consultation.

It can be suggested from the above points that the edifice of the treaty as well as its application largely depend on the availability of expected water. Annexure-II however, screens that reality by ensuring both state more water than whatever was agreed in the previous arrangements. It appears to accommodate almost fully the requirements of Calcutta port and that of the Bangladesh. This might inspired both of the Governments to make a controversial claim that comparing to the previous arrangements, the 1996 treaty is more beneficial for them.⁴⁰ But a careful examination would show that the treaty itself has limitations in some of its provisions, which could jeopardise its implementation.

First, water availability has been calculated on an uncertain basis; Second, allocation of water has hardly been protected in the treaty and Third: the dispute settlement procedure makes no

⁴⁰In West Bengal's parliamentary debate, leader of the opposition called into question the West Bengal Finance Minister's "arithmetic and wondered how both India and Bangladesh could benefit in a situation when the flow of the water in the river had gone down in the recent years". *Govt grilled on Ganga water treaty*, The Hindustan times, 2-97.

provision for third party settlement.

Water availability: Calculation of water availability in the 1996 treaty is remarkably different from that one of the 1977 agreement, which was retained even in the 1982 and 1985 MOUs. The real danger of this calculation lies in two aspects, first, unlike previous arrangements, the 1996 treaty is based on controversial figures of average historic flow and second it has excluded the most recent data on water availability from 1988-96.

a) Average availability: Water availability in 1996 treaty, as the Annexure II suggests, has been calculated on the basis of 40 years (1948-88) average flow for each ten ten-days periods of the specified months. While doing so, this treaty has, as shown in the following table, calculated a quantum of dry season flow which is 12% higher than figures accepted in the previous

arrangements ⁴¹ .					
Water flow at / Farakka	Average flow of all periods	India / withdrawal percent	Bangladesh share percent		
1977(calculated on 75% availability)	68966.67	28233.33	40.94	40733.34	59.06
1996(average flow calculated)	77,416.60	36,740.80	47.46	40,675.80	52.54
Difference	+8,449.93	+8,507.47	+6.52	-57.54	-6.52

This reported increase of 8,449 cusecs of water, on average, in every ten days period contradicts previous experience of both India and Bangladesh during operation of the temporary sharing arrangements⁴².

We have mentioned already that one official publication of 1972 of the India Government itself suggested that the three

41 This table is prepared by averaging the water availability of all ten days periods during 1 January to 30 May. The average availability agreed in 1982 and 1985 MOUs is very negligibly less than that of 1977 agreement.

42 During operation of the 1977 treaty, in 1980 dry season India complaint receiving less water than that agreed in the agreement. See, Hinduistan Times, 14-7-80. During the period of subsequent MOUs, the flow at Farakka went down so low that India and Bangladesh had to invoke provisions of the MOUs to enter into agreement to share 'exception Low flow'.

major irrigation projects in the upstream of Ganges would affect water availability at Farakka⁴³. Furthermore, as reported in India's Newspapers and Journals, in post Farakka periods, a substantial amount of water is being withdrawn, through nearly 400 lift irrigation projects in the upstream of Ganges, before the river reaches Farakka⁴⁴. Only three months before the conclusion of the 1996 treaty, as reported by the India correspondent of BBC world Service, West Bengal Chief Minister made it clear to the Central Foreign Secretary that due to arbitrary withdrawal by UP and Bihar, two upstream states of India, the interests of Bangladesh and WB was being frustrated. As BBC reported, one member of the West Bengal State Government who participated in the meeting with Central foreign secretary revealed that at present not more than 40,000 cusecs are available at Farakka in the dry period⁴⁵. JKC, as quoted in a recent article, also revealed that the Jan- March discharge of the Ganges at Farakka were less by 8,10 and 12 per cent, respectively, in the post Farakka periods(75-88) compared with the pre- Farakka period(49-73) flow⁴⁶.

It can be suggested from the above discussion that the estimation of water availability in the 1996 treaty failed to take account of the impact of upstream diversion. Given the past experience where even 75% availability was not found, this

43 n.22

In an article Published in 1982, Crow quoted a senior Indian negotiator of the 1977 agreement who provided that at current rate of irrigation expansion in the upstream of Ganges, there will be no water at Farakka in fifteen years time. See, Crow, B., 'Apportioning the Brahmaputra, Onward March of India's Rich Peasants', The Economic and Political weekly, December 25, 1982, 2097

44'The main reason' for 'steady decline in the water level in the last five years' at Farakka was pointed out in an analysis in 'India Today' as 'with as many as 400 lift irrigation points along the Ganges, UP and Bihar now siphon off anything between 25,000 and 40,000 cusecs before the river reaches Farakka'. Banerjee. R. 'Indo-Bangla Accord Defying the Current', India Today, 15-1-97, p.110-111.

Increased upstream diversion was alleged also in Indian Express, 15-12-96, Ananda bazar, 10-12-96 The pioneer, 17-12-96.

45 Reported by Subhir Voumik, BBC correspondent in India, broadcasted in 30 8-96, BBC world service, Bengali Section. The BBC report is reproduced in. Aajker Kaghaz, 2-9-96

46 A. Dixit and M.Q. Mirza, Who is afraid of Farakka accord, *Himal South Asia*, January, /February, 1997 61

estimation on average flow appears to be wrongly calculated and to some extent misleading also. This, in all probability, is destined to result in affording less water to both of the states.

b) Exclusion of recent data: Exclusion of data on actual flow of the Ganges from 1988-1996 is another factor to cast a reasonable doubt over the reliability of the figures of water availability in 1996 treaty⁴⁷. As since 1988, India and Bangladesh stopped joint monitoring of the flow at Farakka, there had been no agreed figure as to the quantum of water at Farakka during 1988-96. Bangladeshi members in the JRC could only have recorded the flow Bangladesh was receiving during that period. If these figures are added with maximum possible diversion by India, the total amount of the flow at Farakka, as shown in the following table, is found to be much less than the average flow of 1948-88.

Discharge of the Ganges at Farakka

Periods	1989-1996 (maximum flow)	1948-88 (average flow)	Difference
1-10 January	95605 cusecs	107,516 cusecs	-11911 cusecs
11-20 January	89737 cusecs	97673 cusecs	-7936 cusecs
21-31 January	84034 cusecs	90154 cusecs	-6120 cusecs
1-10 February	77137 cusecs	86323 cusecs	-9186 cusecs
11-20 February	70111 cusecs	82859 cusecs	-12748 cusecs
21-28 February	67559 cusecs	79106 cusecs	-11547 cusecs
1-10 March	65175 cusecs	74419 cusecs	-9244 cusecs
11-20 March	59572 cusecs	68931 cusecs	-9359 cusecs
21-31 March	58803 cusecs	64688 cusecs	-5885 cusecs
1-10 April	57421 cusecs	63180 cusecs	-5759 cusecs
10-20 April	59109 cusecs	62633 cusecs	-3524 cusecs
20-30 April	61030 cusecs	60992 cusecs	+38 cusecs

⁴⁷ The reason of that exclusion, as had been explained by the Finance Minister of the State Government of West Bengal, was Bangladesh's refusal to accept the post-agreement data on the water level recorded unilaterally by India after 1988 when the two states stopped jointly monitoring the water level at Farakka.

1-10 May	58732 cusecs	67351 cusecs	-8619 cusecs
11-20 May	72526 cusecs	73590 cusecs	-1064 cusecs
21-31 May	81997 cusecs	81854 cusecs	+143 cusecs

Source: JRC, Bangladesh, (untitled publication)

This table shows that whatever might be the reason for the exclusion of 1988-96 data, this exclusion certainly negated the possibility of a more reliable account of the water availability. Furthermore, given that India herself does not need to divert full 40,000 cusecs for all ten-days period, the actual availability during 1989-96, in its all probability must have less than what is shown in the above table⁴⁸.

The uncertainty of the water availability is evident also in some of the important provisions of the agreement. Annexure II which contain the table of water availability has merely been addressed in Article II (ii) as an indicative schedule. Without having undertaking any stringent obligation, India only makes a promise to protect the water flow shown in the mentioned annexure. The fragility of that promise can be well assumed from the provision in article II (iii) where both of the states recognise the possibility of water availability below 50,000 cusecs.

The experience of the implementation of the 1996 treaty in the dry season of 1997 justifies all apprehensions regarding less water availability. Because of lower flow at Farakka, both states received less water particularly in the driest period of mid-March to mid-May. Compared to Calcutta, Bangladesh suffered

⁴⁸ As 'India Today' revealed, between April 1 and 10, average for the past five years at Farakka has been just 51,000 cusecs. It quoted Debesh Mukherjee, a retired General Manager of the Farakka barrage project who after noting that water level is consistently declining after 1988 observed that the calculation of water availability at Farakka is based on poor arithmetic. n. 44.

more, in one occasion, even to the extent of receiving a futile 6245 cusecs of water⁴⁹. Though India had attempted to explain the situation as being resulted from natural causes like less rainfall, it was never accepted by Bangladesh⁵⁰. India herself showed no interest to refute Bangladesh's argument that water availability is bound to be less because of indiscriminate upstream diversion⁵¹. Commentating on the situation, it is suggested by some experts that the treaty would have no practical value, unless some steps be taken to ensure steady or increased water supply at Farakka⁵².

Protection of the agreed share: Another important thing to examine is how the sharing arrangement of 1996 treaty has addressed the principle of not causing serious harm to a co-user of an international river. We have seen that the 1977 agreement effectively reflected that principle by making the provision for 80% guarantee clause. Comparing to that, the 1996 treaty has hardly guaranteed protection of stipulated share. The provision attached with the annexure I, which says that each state 'shall receive guaranteed 35,000 cusecs in alternative three 10 days periods during 10 March to 10 May, was not intended to be applicable in a situation when the water is below 50,000 cusecs. Art II(iii) rather says that in case of below 50,000 cusecs availability 'the two Government will enter into immediate

49 As 'India Today' reports, 'Between March 11-21, India was to get 33,931 cusecs under the treaty but ended up getting only 19,000 cusecs on an average. And on March 17, it got only 18,000 cusecs, an all time low. In the same period Bangladesh received only 21,000 cusecs against the agreed share of 35,000 cusecs. And during the 10 days cycle of March 21-30 its share further dipped. The flow measured at Hardinge bridge was 6,457 cusecs on March 27. Two days later, it was marginally improved by another 2,000 cusecs, still far short of the 29,688 cusecs, it was supposed to get'. Indian Today, April 30, 1997.

50 In an expert level meeting Bangladesh refused to accept that less rainfall is liable for low flow at Farakka. Bangladesh argued that less rainfall in March is common in every year and water availability in 1996 treaty is fixed taking account of less rainfall in dry seasons in last 40 years. Janomot, 18-24 April 1997. See also, Janakandha, 9/4/97, 24/4/97.

51 Janakandha, 11/4/97, 24/4/97.

52 Miah, M.M., 'Panibihin pani chukti', Khoborer Kagaz, 24-6-97. Khan, A.H., 'Ganges Water Treaty- An Analysis of First Year Implementation', The Daily Star, 26-5-97

Explaining the reason why the treaty 'is in danger of being reduced to a meaningless document' the Indian today asserted that the water flow has declined drastically since 1988, 'especially after UP and Bihar began drawing 25,00-45,000 cusecs through lift irrigation projects before the water reached Farakka barrage'. See, India Today, 30-4-97.

consultation to make adjustment on an emergency basis, in accordance with the principle of equity, fair play and no harm to either party'.

Art II(iii) regarding consultation actually reproduced the provision of the 1982 and 1985 MOU. The inherent flaw of that arrangement was noted in 1983 when the exceptional low flow occurred in April 1983, but India and Bangladesh failed to hold consultation until July 1983. Abbas criticised the provision that the states would consult when the exceptionally low flow occurred by saying that, 'This is not a workable proposition as water would not wait for such consultation and would be lost by the time any consultation could be held'⁵³. The 1985 agreement, being concluded on the same date of 1985 MOU appeared to mitigate that uncertainty. Instead of holding consultation on any later date, the states signed that agreement on the same date of the MOU of 1985 in anticipation of exceptionally low flow in any of the three dry seasons.

Compared to that, in case of below 50,000 cusecs water availability, The 1996 treaty merely provides for making immediate adjustment on the basis of the principle of equity, fair play and no harm to either party. Further to its inability to address the urgency of the situation, this provision hardly looks to be efficient to protect the interest of particularly the downstream state. In the first place, if two states fail to reach agreement on how the below 50,000 cusecs would be shared, the downstream state, having no control on the water flow, would be thrown in absolute uncertainty. Even if agreement can be reached, her share in the residual flow after unrestricted upstream diversion could fall far short of her agricultural and other life saving uses. The extent of injury Calcutta is supposed to suffer in that case, appears to be less because of the available alternatives of 'capital' dredging and the proposed plan of diverting the water of Sankosh⁵⁴. But the uncertainty

⁵³Abbas, n. 1, 115

surrounding water availability, could hardly avoid harm to the downstream state having no plausible alternatives for water supply from Ganges⁵⁵.

As experienced in 1997, due to below 50,000 cusecs water availability, the guarantee clause for 35,000 cusecs could hardly been enforced in some driest periods⁵⁶. In that situation, India failed to respond timely to Bangladesh request for immediate consultation when during March and April water came down to less than 50,000 cusecs. The urgency of the situation was lost by the time the states could have agreed how to address this situation⁵⁷.

Limitations of the implementation mechanism: The 1996 treaty has followed the previous short-term arrangements to retain a joint committee, consisting of equal number of representatives of two states for implementation of the sharing arrangement. The committee is assigned to set up teams to observe and record the daily flow and is entrusted with the primary responsibility of dealing with any difference or dispute in regard to implementing sharing arrangement. If the committee fails to resolve any dispute it has to be referred to JRC and then to the two Governments for urgent discussion.⁵⁸

⁵⁴While negotiating the 1996 treaty India's Central Government assured to take up, 'capital dredging, i.e. full scale dredging, of which, as the West Bengal Finance Minister revealed, in the past 20 years only one-third was carried out. This capital dredging was promised to be undertaken in addition to regular dredging, to remove the long-clogged sand and to protect the Calcutta port in case of lower flow of Ganges. For detail, see, *Asian Age*, 13-12-96, *Bangalok*, 14-12-96, *Anadabazar*, 14-12-96

The Sankosh project, on which negotiation with Bhutan is underway, is planned to divert 13,000 cusecs water by a 143 KM canal from the Sankosh river of Bhutan for West Bengal's exclusive use *Indian Express*, 15-12-96, *The pioneer*, 17-12-96, *India Today*, 15-1-97, *The statesman*, 6-2-97

Indian press also reported that West Bengal gave green signal for a treaty with Bangladesh because she was assured of 13,000 cusecs more water from the Sankosh project. It is concluded that because of the Sankosh project West Bengal would be less worried about the reduction of the Ganges flow at Farakka, which is estimated to be upto 5,000 cusecs in coming five years. *Aananda Bazar Patrica*, 13-12-96, *Indian Express*, 10-2-97

⁵⁵White Paper, n. 13.

⁵⁶*India Today*, 30-4-97, *Indian Express*, 6-4-97, *Janakandha*, 27-4-97, 16-5-97.

⁵⁷Khan, A.H, n. 52

⁵⁸Art IV-Art VII, 1996 Treaty

The insufficiency of this arrangement was severely felt in the dry season of 1997 when a wide difference of water released at Farakka and received at Hardinge Bridge of Bangladesh was noticed, which deprived the downstream state a lion portion of her share⁵⁹. The entrusted bodies for dispute resolution failed to deliver any agreed opinion on this discrepancy. On other occasion, even when JRC succeeded to recommend a solution, compliance with that recommendation could not have been secured. On 1 April, though JRC recommended 11,842 cusecs to India and 33,000 cusecs to Bangladesh, India diverted 26,300 cusecs on that day.⁶⁰

In a joint press briefing in 20 July, following two days meetings of the JRC, the Indian Water Resource Minister admitted that Bangladesh got less water than she was supposed to get under the Ganges water treaty. He made assurance to investigate the matter in order to ensure that 'the Ganges treaty would be fully implemented and Bangladesh would receive her due share as per the treaty'.⁶¹ Bangladesh water resources Minister revealed that a joint scientific study would be launched to investigate the reasons of the discrepancies of the water released at Farakka and received at Hardinge bridge.⁶² The synthesis of their statement points out to the limitation of the existing machinery,

59Khan, A.H. (n.52) compiled the figures of discrepancies in the following table.:

Period	agreed release for Bangladesh	release at Farakka	actual receipt at Hardinge bridge
1-10 Mar	33,085 cusecs	33,489 cusecs	23,291 cusecs
11-20 Mar	35,000 cusecs	35,028 cusecs	19,930 cusecs
21-31 Mar	-----	17,857 cusecs	13,823 cusecs
1-10 Apr	35,000 cusecs	30,137 cusecs	17,857 cusecs
11-20 Apr	19,526 cusecs	25,613 cusecs	24,559 cusecs
21-30 Apr	35,000 cusecs	35,065 cusecs	27,695 cusecs

60 The 'Indian Express' accused India Government for 'making a mockery of the terms of the accord which was hailed as historic and trend setting'. Its report found that 'the real arm twisting began on April 1. The water availability had dropped further by then. Whereas the JRC recommended 11,842 cusecs to India and 33,000 cusecs to Bangladesh on that day, the Technical Advisory Committee really turned the tap on for India-giving itself 26,300 cusecs cusecs and Bangladesh only 21,000 cusecs'. Indian Express, 6-4-97

61 'Kom pani payechey Bangladesh, aata aar hobe na/bharat ganga badh shagataa zanay//Sis Ram Ola'. Janakandha, 2_1-7-97

62Ibid,

entrusted for the implementation of the 1996 treaty. Though the ministers of two countries agreed to take some steps including undertaking of scientific study, the past record suggests that both states very rarely could agree on issues concerning questions of fact.⁶³ Given that, unless they could review the flaws of the treaty regarding water availability, success of bilateral efforts to secure implementation of the treaty in driest days would always be doubtful.

4. Future of the treaty

The 1996 treaty provides two windows for reconsidering or reshaping the existing arrangement for sharing, first, by augmenting the existing flow and second, by making adjustment during review of the agreement.

As regards augmentation, though the preamble mentioned the 'the need for a solution to the long term problem of augmenting the flow of the Ganges' the text of the treaty has not mentioned anything regarding study of the augmentation proposals.⁶⁴ 'The optimal utilisation' mentioned in the preamble rather was sought by separate plans- for India the Sankosh project and for Bangladesh, the Ganges barrage project.⁶⁵ These projects would take many years to be operative to lessen dependency on the dry season flow at Farakka. So irrespective of the outcome of the augmentation projects, the success of the 1997 treaty depends, at least for many years, on ensuring equitable utilisation of existing flow.

The provision regarding reviews is potentially promising for reconsideration of the sharing arrangement. During a review of the agreement, the first of which can be claimed after two years, adjustment is promised to be based on principles of equity,

63 n. 1

64Ainuun Nishat (n. 55) provided that the 1996 treaty fails to refer anything on augmentation proposals because India was interested only in her Link Canal proposals.

65 The Ganges barrage project would be constructed at Pangs- within 60 miles of the Farakka barrage to irrigate 3.33 million acres land of the south-west of Bangladesh. Feasibility study of the barrage was done in 1969 and also in 1984, which now is being modified. Water resource minister told the parliament that the Ganges barrage project would take 10 years for completion. Sanbad, 20-12-96, Janokandho, 5-2-97

fairness, and no harm to either party. If no agreement on such adjustment can be arrived at, Bangladesh is guaranteed, until the disagreement continues, at least 90% of her share according to the formula referred to in Annexure II of the treaty. But as that annexure states nothing about less than 50,000 cusecs of water, this guarantee would also become useless in such situations.

Experience of the implementation of the treaty in 1997 dry season suggests that the future of sharing Ganges depends much on the amount of water availability at Farakka. Unless India takes measures to comply with her pledge of keeping the water flow in line with the figures shown Annexure II of the treaty, the much-talked treaty is bound to be largely inoperative in years to come. In that case the states shall have to conclude supplementary agreement to share waters of less than 50,000 cusecs. Article III (iii) of the treaty provided that would be done in accordance with the principle of equity, fair play and no harm to either party. It is arguable how these principles could be applied in allocating a diminishing flow, unless due regard is given to protect the water flow at the Farakka point of the Ganges river. This could only be done by regulating the withdrawal of the upstream flows of the Ganges and by providing Bangladesh with all the relevant information.