

**POTENTIAL OF INDIA'S NORTHERN RIVERS FOR LEVERAGING
CONFLICT RESOLUTION WITH PAKISTAN**

**A dissertation submitted to the Indian Institute of Public Administration (IIPA), New Delhi
for the degree of Master's Diploma in Public Administration (MPDA) in partial fulfilment
of the requirements for the 45th Advanced Professional Programme in Public
Administration (APPPA)**

By

Brigadier Sandeep Vohra

Roll No – 4546

Under the Guidance of

Prof Vinod Kumar Sharma



45TH ADVANCED PROFESSIONAL PROGRAMME IN PUBLIC ADMINISTRATION

2019-20

INDIAN INSTITUTE OF PUBLIC ADMINISTRATION

NEW DELHI

CERTIFICATE

I have the pleasure to certify that Brigadier Sandeep Vohra has pursued his research work and prepared the present dissertation titled “**Potential of India's Northern Rivers for Leveraging Conflict Resolution with Pakistan**” under my guidance and supervision. The dissertation is the result of his own research and to the best of my knowledge, no part of it has earlier comprised any other monograph, dissertation or book. This is being submitted to the Panjab University for the degree of Master of Philosophy in Social Sciences in partial fulfilment for the Advanced Professional Programme in Public Administration of Indian Institute of Public Administration (IIPA), New Delhi.

I recommend that the dissertation of Brigadier Sandeep Vohra is worthy for the consideration for the award of M. Phil degree of Panjab University, Chandigarh.

"Approved by the Guide - Senior Professor Vinod Kumar Sharma."

Date:

(Vinod Kumar Sharma)

Senior Professor

Indian Institute of Public Administration

I.P Estate Ring Road

New Delhi, 110002

ACKNOWLEDGEMENT

I express my sincere thanks to my guide Prof Vinod Kumar Sharma, Senior Professor, Disaster Management and Environment, IIPA who has helped and guided me in this long journey of learning. He took a lot of effort in making me understand the fine nuances of the topic and then helped in selection and collection of the material from various sources. He has also suggested relevant changes in the report to make it more useful. Despite his hectic academic and administrative commitments, he always spared his valuable time to steer my research work with experienced observations and perspective comments. He has also suggested relevant changes in the study to make it more useful. Without his guidance and encouragement, it would not have been possible to complete the dissertation with quality outcomes in such a limited time.

I also express my gratitude to the IIPA Library staff, as also the staff of APPPA office for their support.

Date:

(Sandeep Vohra)

Place: New Delhi

Brigadier

DISCLAIMER

The findings, interpretations, views, recommendations and conclusions in the dissertation are those of the author, and should not be attributed in any manner to any authority, organization or individual.

Date:

(Sandeep Vohra)

Place: New Delhi

Brigadier

INDEX

| Content | Page Number |
|---|--------------------|
| Certificate | I |
| Acknowledgement | II |
| Disclaimer | III |
| Abbreviations | V-VI |
| List of Figures | VII |
| List of Charts | VIII |
| Executive Summary | IX-XVII |
| <u>Chapter I</u> : Introduction, Literature Review and Methodology | 1 - 14 |
| <u>Chapter II</u> : Indus River Basin and Indus Water Treaty | 15 - 33 |
| <u>Chapter III</u> : Northern River Waters: A Strategic Asset | 34 - 40 |
| <u>Chapter IV</u> : Leveraging Northern Rivers as a Tool For Conflict Resolution With Pakistan | 41 - 48 |
| <u>Chapter V</u> : The Plausible Approach and Capacity Building | 49 - 63 |
| <u>Chapter VI</u> : Options For India | 64 - 75 |
| <u>Chapter VII</u> : Prognosis and Way Ahead | 76 - 83 |
| References | 84 - 88 |
| Bibliography | 89 - 94 |
| Appendices | 95 - 139 |

ABBREVIATIONS

| Serial Number | Abbreviation | Full Form |
|----------------------|---------------------|---------------------------------|
| 1 | asl | Above Sea level |
| 2 | BCM | Billion Cubic Metres |
| 3 | CoA | Court of Arbitration, The Hague |
| 4 | DCB | Ditch Cum Bund |
| 5 | DPR | Draft Project Report |
| 6 | GWOT | Global War on Rerrorism |
| 7 | HEP | Hydro Electric Project |
| 8 | ICA | Irrigated Cropo Area |
| 9 | ICJ | International Court of Justice |
| 10 | ILC | International Law Commission |
| 11 | ISI | Inter Services Intelligence |
| 12 | IRB | Indus River Basin |
| 13 | IRSA | Indus River System Authority |
| 14 | IWC | Indus Water Commission |
| 15 | IWT | Indus Water Treaty |
| 16 | J&K | Jammu anf Kashmir |
| 17 | LBOB | Left Bank Outfall Drain |
| 18 | MAF | Million Acre Feet |
| 19 | NE | Neutral Expert |
| 20 | PoK | Pakistan Occupied Kashmir |

| | | |
|----------------------|---------------------|--|
| 21 | UN | United Nations |
| Serial Number | Abbreviation | Full Form |
| 22 | UT | Union Territory |
| 23 | USBR | United States Bureau of Reclamation |
| 24 | WAA | Water Appropriation Authority |
| 25 | WAPDA | Pakistan Water & Power Development Authority |

LIST OF FIGURES

| Figure No | Depiction | Page Number |
|------------------|--|--------------------|
| Figure 1 | Rivers of Indus Valley Basin | 16 |
| Figure 2 | Composition of Indus Valley Basin | 17 |
| Figure 3 | Distribution of Rivers Under IWT | 18 |
| Figure 4 | Water Share as per IWT | 19 |
| Figure 5 | IWT – Key Points | 22 |
| Figure 6 | Hydroelectric Projects in J&K | 25 |
| Figure 7 | Baglihar Hydel Project on Chenab River | 26 |
| Figure 8 | Baglihar Project Dispute | 27 |
| Figure 9 | Kishanganga Hydel Electric Project | 29 |
| Figure 10 | Wular Barrage on Jhelum | 30 |
| Figure 11 | Pak Perception Threats Due to Wular Barrage | 31 |
| Figure 12 | Existing/ Under Construction/ Proposed Hydro Projects in J&K | 32 |
| Figure 13 | Water Crisis Situation in Pak | 33 |
| Figure 14 | Left Bank Outfall Drain Disaster | 39 |
| Figure 15 | Flow Chart of Complexities in Indus Basin | 41 |
| Figure 16 | Pakistan’s Jugular Vein – The Indus | 42 |
| Figure 17 | Pakistan’s Canal Infrastructure Along Borders With India | 45 |
| Figure 18 | Kabul River Draining Into Indus | 61 |
| Figure 19 | Hydroelectric Projects on Kabul River | 62 |
| Figure 20 | Water – India and Its Neighbours | 64 |
| Figure 21 | Options For India | 68 |
| Figure 22 | The National River Linking Project | 79 |

LIST OF TABLES

| Table No | Content | Page Number |
|-----------------|---|--------------------|
| Table 1 | Water Share Between India and Pakistan as per IWT | 19 |
| Table 2 | Permissible ICA for India as per IWT-1960 | 20 |
| Table 3 | Distribution of Storage Capacity to India | 20 |
| Table 4 | Determinations Given by Neutral Expert | 28 |

EXECUTIVE SUMMARY

‘Water is a Strategic Resource’ being scarce and essential for socio-economic growth of any nation. It is a vital resource with no economic substitute. The demand for water is ever increasing with concurrent decrease in its availability. In pre-partition days, India and Pakistan were one political entity and the contention for water was non-existent. However, partition in 1947 caused the division of this crucial natural resource. While there had been considerable irrigation development in the undivided Punjab based on the waters of the Indus system, the Radcliffe line disrupted this arrangement on partition in 1947, cutting right across the Indus river irrigation system.

While both India and Pakistan got their independence together, the two countries followed totally different growth trajectories. While India moved along the path to progress and developed as a mature democracy, Pakistan on the other hand plummeted as a ‘quasi failed’ state at best, with enduring opposition towards India’s rise. Besides the visceral hatred towards India, two other reasons for this deep rooted conflict are Kashmir and water. These two are interconnected.

In the climate of continued mistrust and deteriorating political relationship, Pakistan declared a ‘thousand year war against India’ in 1965 with the Pakistan army, the ‘deep state’ within Pakistan, adopting the policy of ‘bleeding India through a thousand cuts’ to stall India’s growth. The continued use of covert, low-intensity warfare with infiltration and militancy by Pakistan against India are seriously jeopardizing India’s growth and forcing India to commit considerable resources in tackling the menace. While a punitive military action against Pakistan by the superior Indian defence forces is a possible solution, however, it will be at the cost of men and material resource and economic and developmental goals of India. Additionally, a war

between India and Pakistan, both nuclear weapons states, would turn the Indian sub continent into an international flashpoint with far reaching global ramifications. There is therefore a need to explore alternate options to get Pakistan to mend its ways.

The linkages between Pakistan's need for the waters of India's northern rivers and the Kashmir issue clearly emerge from the study and can be further associated with Pakistan's anti India policies and activities. Pakistan's continued proxy war is an offshoot of these policies. Despite various diplomatic doles and concessions, Pakistan continues fermenting trouble for India. Given the sensitivity of Pakistan towards Jammu and Kashmir (J&K) and its waters, there is a case for India to use these waters as tool for conflict resolution with Pakistan.

With this as an aim, the study embarked on the research of the potential of the northern rivers towards conflict resolution with Pakistan.

Water Situation in Pakistan

Between 1951 and 2015, per capita water availability in Pakistan declined from 5,260 cubic metres per inhabitant to 940 cubic metres per inhabitant. According to UNDP, Pakistan will face water scarcity by 2025. Water scarcity is already stoking violent conflicts in the country, which is already battling insurgency. Three out of four Pakistani provinces blame the most populous and politically empowered province, Punjab, for usurping their water sources. Owing to depletion of water supply from eastern rivers under control of India as per existing water sharing arrangements, Pakistan had to construct canals to draw waters from Chenab and Indus into Ravi and Sutlej for Punjab. This is a major source of unrest/discontent in the agrarian society of Sindh. Insufficient flow in Indus in the lower reaches is unable to prevent sea intrusion in the Indus estuary. In the former Punjab area in Pakistan, 5 million hectares have already gone out of cultivation due to salinity caused by water logging, 690,000 hectares are in an advanced

stage of deterioration, and 2 million hectares are affected to a lesser degree. Pakistan is therefore facing desertification owing to water logging and soil salinity consequent to which its present day yields are one of the lowest in the world. The change in grazing practices has virtually reduced some areas in its Cholistan desert to sand dunes. More than one-third of the country has been classified as under risk of desertification. This is when; Pakistan is enjoying unrestricted use of western rivers (Chenab, Indus and Jhelum), Kabul river and overflow of eastern rivers.

Indus Water Treaty and Its Relevance

The study analysed the depleting water resources in Pakistan and conclusively arrived at the overdependence of Pakistan on waters of the Indus river basin. The availability of Indus basin waters to Pakistan under the landmark Indus Water Treaty, 1960 has been deliberated upon clearly bringing out how the Treaty has been unscrupulously misused by Pakistan to obstruct developmental projects by India on the rivers of Indus basin. The Treaty provided exclusive use of eastern rivers (Sutlej, Beas and Ravi) by India and exclusive use of western rivers (Chenab, Jhelum and Indus) by Pakistan except for the domestic, non-consumptive, agricultural use and generation of hydro-electric power, as specified for by India. The study highlights the poor development and absolute mismanagement of the water resources in their country by Pakistan which is responsible for the water woes of the nation.

Water as a Leveraging Tool

Growing requirements and aspirations of a progressive Indian's population warrants larger share of the waters from its northern rivers than what is being currently utilized by it. This share is available to India within the ambit of Indus Water Treaty, but is being repeatedly objected to by Pakistan under false pretexts. Pakistan on the other hand is mismanaging its waters and at the same time seeking India's legitimate share of Indus waters. While till now

India has been graciously adhering to the tenets of IWT, albeit at the cost of its own lawful and justifiable requirements, the conduct of Pakistan in this regards as also the relevance of IWT in the current scenario needs to be being increasingly challenged. Charged opposing political sentiments and mistrust apart, there is a striking change in the geo political and socio economic environment today vis-a-vis the situation prevalent at the time of signing of the Treaty 60 years ago. This coupled with effects of climate change, growing population of both countries and their requirements warrant changes or renegotiation of the IWT. This besides addressing national interests of India, would also pressurize Pakistan to cede its anti India stance and proxy war.

Means by which water can be used in different modes, both offensively and in defence, have be analysed in the study along with their likely effects. The requirement of adequate infrastructure to exploit these methods is a primary pre-requisite.

One of the plausible approaches, to elicit favourable response from Pakistan and to utilize the potential of our northern rivers as an effective tool, is to increase the criticality of water for Pakistan which is fast heading towards water scarcity. This is feasible to a considerable extent within the ambit of IWT. However, for this certain capacities would have to be developed by India to have the requisite effect. These necessitate a time bound focused approach with dedicated earmarking of efforts to optimize the potential of these rivers.

Options For India

The research brings out various options available to India for using its waters from the northern rivers for safeguarding its national interests and drawing out desired response from Pakistan. The options evolved in the study were as given below:-

- (a) Option I : Abrogate the Treaty Unilaterally and Stops the Waters from Flowing into Pakistan. This option has been found short on numerable fronts firstly, it would

XIII

show India as a irresponsible state who does not respect its international commitments; secondly, India would be against the UN Convention of 1997; thirdly; India would not only cease moral authority to challenge China on her violation of the UN Convention but would also have to be prepared to similar hostile acts from China with respect to denial of water from Brahmaputra in East and Sutlej in West. Lastly, this option would require putting in place huge infrastructure and storage capacities before implementing the option for the water held back from flowing into Pakistan. This infrastructure is not currently available and would take time to build. This option is therefore, not the best option when considering use of our northern rivers for conflict resolution with Pakistan.

(b) Option II : Status Quo Ante to be Maintained. This is the option which Pakistan may want India to continue with, but as a *quid pro quo*, it is not doing enough to assure India that the terrorist related activities being planned and executed from its soil will not be further encouraged. Exercising this option portrays India as a soft nation not capable of looking after its population and national interests and is therefore not recommended.

(c) Option -3: India Goes Ahead With Plans to Fully Utilise Its Entitled Waters Under IWT and Simultaneously Works Towards Renegotiating IWT. India is well within her rights to fully stop the leakages from the eastern rivers and make efforts to impound the permitted 3.6 MAF from the western rivers as per the IWT. Exercise of that right cannot invite differences with the World Bank which stood guarantee to the IWT, nor will it leave any scope for the world opinion to allege violation of the rights of lower riparian states as provided under the provisions of the 'UN Convention of 1997 on International Channels'. Besides meeting its own requirements of water and electricity,

this option shall usher in development in J&K leading to its smooth transition as partners in India's growth and prosperity. Simultaneously, India needs to work towards revisiting the IWT. This option is the most workable and preferred option which will maintain the credibility of India in the world order and is likely to achieve the desired results eliciting favourable response from Pakistan.

The data from the secondary sources as also from the primary sources (responses to the questionnaire from 144 respondents) conclusively point towards the potential of our northern rivers for leveraging conflict resolution with Pakistan and drawing out amenable response from Pakistan. However, in order to manifest this capability, India has to strategise its actions and proactively reengage the world community to its advantage. Towards this, the following recommendations are made:-

- (a) Completion of Ongoing Projects. India needs to proceed relentlessly towards early time bound completion of its planned infrastructure projects on the western rivers as they are well within the ambit of IWT. It should restart and expedite stalled projects like Tulbul Navigation Project. Objections by Pakistan should not lead to stopping of work on the projects but should be dealt separately under the provisions of the Treaty on a parallel track with speed.
- (b) Future Planned Projects. A roadmap needs to be prepared and frozen for future projects on the northern rivers. These should be fast tracked within our capability of garnering adequate resources to undertake numerous projects simultaneously. Only bare minimum essential details, as required under the provisions of IWT should be shared with Pakistan and that too just in time. We may consider incorporating various

international players in these projects to raise the stakes in these projects thereby making the opposition by Pakistan difficult.

(c) Maintenance Works On Existing Infrastructures. Repair and maintenance works on the existing infrastructures on the western and eastern rivers should be undertaken to make them more efficient and increase their longevity. De-siltation works to be carried out to improve existing capacities of the pondages.

(d) Infrastructure on Eastern Rivers. Pakistan's dependence on the northern rivers be further accentuated by totally stopping the flow of waters of the eastern rivers (Sutlej, Beas and Ravi). The Shahpur Kandi Dam should be completed at the earliest to stop waters of Ravi river from flowing into Pakistan.

(e) Usage of Excess Capacities. Existing capacities of our river systems need to be enhanced to accommodate this supplementary water available by optimizing the western and eastern rivers. For this, the National River Linking Project should be pursued relentlessly. This project with some modifications to incorporate the waters of Indus river basin will facilitate transfer of excess water to be put to good use by the nation.

(f) Narrative Building. India needs to ginger up its diplomatic initiatives to build a strong narrative on its water needs and the way it has been short changed by the IWT. This change of narrative has to be pursued vigourously at all levels and at all forums. This will take time but will send a strong signal to Pakistan about our concern towards our waters. This changed narrative will also form the basis of the revision of IWT in due course of time.

(g) Expose Fissures Within. The inability of Pakistani authorities in management and development of its water resources leading to the country on the verge of water

scarcity should be highlighted as a counter to false propaganda by them blaming India as a reason of their water woes. Sane voices in Pakistan should be encouraged and supported to step forward to acknowledge India's meticulous record towards upholding of the tenets of IWT.

(h) Water Encirclement. India should continue its assistance to Afghanistan in construction of the dams over Kabul river. This will further reduce the availability of water in Pakistan and make the water from the Indian rivers dearer thereby increasing their potential to leverage conflict resolution with Pakistan.

(j) Assuage to Neighbours. Anxious concerns by India's balance neighbours with whom it has water sharing arrangements need to be addressed with all seriousness through diplomatic initiatives and confidence building measures. If felt necessary, certain concessions may be considered with these countries in this regards befitting of a mature larger neighbour.

(k) Tough Stand. India has been too accommodating towards Pakistan's unjustified demands with respect to IWT. Data provided relating to hydrological aspects and projects should be strictly in accordance with IWT and probably 'just a little less and just a little late'.

(l) J&K Factor. India's efforts to boost infrastructure on the northern rivers with the aim to usher development in the State and to eradicate militancy as its contribution to GWOT and to promote its national interests needs to be highlighted to the world community. The vocal support of the people of J&K in this regards will find acceptance in the global order.

(m) Review of IWT. Concurrent with the above listed actions, India needs to gradually but firmly build international acceptance to the revision of the IWT. This India needs to do from a position of strength as an emerging regional and global leader.

CHAPTER I- INTRODUCTION, LITERATURE REVIEW AND METHODOLOGY

“Fierce competition over fresh water may well become a source of conflict and wars in the future.”

Kofi Annan (2001)

Background

Water from Indus river and its tributaries has been the life-line of people living in the Indus river basin. However, there is a wide variation in the availability of water between various rivers of the basin and that is why from late nineteenth century, efforts were made to create an irrigation infrastructure in the forms of link canals and headworks to transfer water from surplus to deficient regions and rivers through an integrated canal system. However, this was essentially limited to eastern rivers, namely Ravi, Sutlej and Beas, and benefitted those areas which were along these rivers and canals. At the time of Partition water sharing between India and Pakistan could not be arrived at because of a peculiar situation wherein two of the major headworks, namely Ferozpur (Harike) and Madhopur headworks, were in India and canal system was in Pakistan. After sustained negotiations, finally water sharing of rivers of the Indus river basin could be achieved when the Indus Water Treaty (IWT) between India and Pakistan, brokered by the World Bank was signed in 1960¹. Although both the countries felt that they were short charged in the distribution of water bearing assets, the Treaty continued with an uneasy calm over the utilization of water, often interrupted with accusations from both sides.

In a 1965 speech to the UN Security Council, Zulfikar Ali Bhutto declared a ‘thousand year war against India’. Pakistani Army Chief General Zia-ul-Haq gave form to

Bhutto's 'thousand years war' with the 'bleeding India through a thousand cuts' doctrine using covert and low-intensity warfare with militancy and infiltration. This doctrine was first attempted during the Punjab insurgency and then in Kashmir using India's western border with Pakistan.

Later in 1990, a Pakistan army brigadier in his thesis at the Royal College of Defence Studies in London listed three reasons for his country's enduring conflict with India: hatred, Kashmir and water². The hatred was visceral; the second and third reasons were linked. Pakistan, he reasoned, needed to control Jammu and Kashmir not just for territory but because of the country's water that flowed through it. The officer was General Pervez Musharraf. The Pakistan's doctrine of 'bleeding India through a thousand cuts' through proxy war continues till date and includes the targeting of various elements of Indian progress with a view to damaging, degrading or destroying the engines of growth and critical centres of power and strength of our country.

Continuous efforts by Pakistan to destabilise India are required to be dealt with firmly and with resolve. Till late, India has largely conducted its counter-proxy war campaign within its borders and on its own side of their Line of Control. While the strategic restraint shown by India, despite grave provocation, enabled the country to keep the level of conflict low and sustain a reasonable rate of economic growth, it has not succeeded in creating any disincentives for Pakistan's deep state controlled by the Pak army³.

The reasons for Pak army's hatred towards India are manifold but the main is its failure in military misadventures in the Indo-Pakistan conflicts of 1947, 1965, 1999 and humiliating dismemberment of the nation in Indo-Pakistan War of 1971. The Pak Army/ ISI owe their very existence as 'saviours of the nation' and to their enmity with India without

which they would lose their exalted status in Pakistani society and the enormous power they wield in government, and be relegated to the background. The Pak Generals would no longer be able to laugh all the way to the bank. So, this proxy war against India by Pakistan in Kashmir will continue and the Pak Army/ ISI will keep trying to infiltrate their 'good' terrorists who are their 'strategic assets' into Kashmir.

If the two countries went to war, a major clash between the two armies, though would be attempted to be kept limited by Pak, would be inevitable. Outnumbered and under-equipped, the Pakistani army believes it is in a position to launch small local offensives, before the Indian army can reach its jumping-off points, to occupy favorable terrain. This too is being countered by the revised 'cold start' and the Integrated Battle Groups strategy being evolved by the Indian defence forces. The disparity in forces means the Pakistanis cannot even hope to have a major, war-winning offensive and terminate a ground war on their own terms. As a result, the Pakistani army is increasingly relying on continued proxy war to aid their conventional forces in addition to the persistent nuclear sabre rattling⁴.

These attempts by Pakistan, though befittingly thwarted by the Indian armed forces, compel India to commit considerable resources and funds which hinders India's smooth trajectory among the developing nations. The inability of Pakistan defence forces to stand up against the superior Indian defence forces is a foregone conclusion. While a onetime punitive military action against Pakistan could be a plausible solution against the Pakistani policy of proxy war, it might not be in the best interest of India to resort to it due to many reasons. Wars are an expensive proposition and besides excessive men and material costs, they severely affect the economy and development of the warring nation. Additionally, a war between India and Pakistan, both nuclear weapons states, would turn the Indian sub continent

into an international flashpoint with far reaching global ramifications. There is therefore a need to explore alternate options to get Pakistan to mend its ways. Given the sensitivity of Pakistan towards the State, now Union Territory (UT) of Jammu and Kashmir (J&K) and its waters, there is a case for India to leverage these waters towards conflict resolution with Pakistan.

It is well understood the world over that 'Water is a Strategic Resource' being scarce and essential for socio-economic growth of any nation. It is a vital resource with no economic substitute. The demand for water is ever increasing with concurrent decrease in its availability. In pre-partition days, India and Pakistan were one political entity and the contention for water was non-existent. However, partition in 1947 caused the division of this crucial natural resource.

Both India and Pakistan are largely dependent for waters of the Indus basin which is fed by the rivers of mighty Himalayas with Pakistan drawing 85% of its water from Indus river basin. The control and use of the waters of these rivers of the Indus basin is governed by the Indus Water Treaty (IWT) signed in 1960 by India and Pakistan. The Treaty gave exclusive use of eastern rivers (Sutlej, Beas and Ravi) to India and western rivers (Chenab, Jhelum and Indus) to Pakistan with India being given limited usage rights of the western rivers. Due to their origin, these rivers provide distinct advantage to India to control their availability and use by Pakistan.

As the exclusive use of the eastern rivers has been given to India under the provisions of Indus Water Treaty, the research study primarily examines the dynamics of the western tributaries of the Indus river basin viz Chenab, Jhelum and Indus, for which India has partial usage rights. **These western rivers (as described under IWT) being the three major**

northern most rivers of India, the terms ‘northern’ and ‘western’ in the context of the rivers have been used interchangeably and are synonymous for the purpose of this dissertation.

Statement of the Problem

Continued use of covert, low-intensity warfare with infiltration and militancy are seriously jeopardizing India’s growth and forcing India to commit considerable resources in tackling the menace. While a punitive military action against Pakistan by the superior Indian defence forces is a possible solution, however, it will be at the cost of men and material resource and economic and developmental goals of India.

Economic strangulation and diplomatic isolation of Pakistan on the global war against terrorism are positive initiatives embarked by India to force Pakistan to stop its low intensity conflict and cross border terrorism against India. However, the unabated actions by Pakistan towards destabilisation of India, J&K in particular, and the continued state of denial need to be addressed with a firm hand. Towards this, there is a need to work out an out of the box strategy to force Pakistan to change course and cede its strategy of proxy war against India. It is felt that a solution could lie in leveraging India’s northern rivers to provide a viable option for conflict resolution with Pakistan.

Research Objectives

The objective of the research is to analyze the dynamics of waters of our northern rivers and their ability to influence Pakistan’s anti India activities including proxy war. The research shall examine the water sharing arrangements between India and Pakistan, in particular the Indus Water Treaty (IWT) and the ways in which India’s northern rivers can be leveraged to own advantage. It shall research on the options available to India to use these

waters for suitable response from Pakistan and the strategies that need to be evolved to accomplish the desired effect.

Hypothesis

Given the significant role played by India's northern rivers in the socio-economic matrix of Pakistan, it is felt that they have the potential for conflict resolution with Pakistan. There is a need to take a holistic view of the utilization of these rivers to strategise favourable response from Pakistan. The hypothesis for the research is given below:-

- (a) Null Hypothesis (Ho). Leveraging of northern rivers of India do not have the potential for conflict resolution with Pakistan.
- (b) Alternate Hypothesis (H1). Leveraging of northern rivers of India have the potential for conflict resolution with Pakistan.

Justification for the Research

Pakistan Army is the dominant player in all spheres of influence and governance in Pakistan. It has never been able to come out of the shock and humiliation of its defeats at the hands of Indian Army during previous wars and military engagements. The very existence and status enjoyed by the Pakistan Army has hinged on its predominant role in Pakistan's premeditated hatred against India and the Kashmir issue. Analysing its odds against the superior force like Indian defence forces, its own economic condition and the world opinion against Pakistan, Pakistan Army adopted the doctrine of using covert and low-intensity warfare with militancy against India. This has been an impediment in India's growth and its quest to concentrate towards its goal of being a regional and global super power. With the abrogation of Article 370 by Indian Government, the Pakistan Army has further run out of arrows in its quiver. While India's diplomatic, economic, cultural and social initiatives have

been able to isolate Pakistan in the world forum, the nation continues in denial mode. There is thus no likelihood on the part of Pakistan to make amends. Full fledged war to teach Pakistan a lesson, though an option, is not desirable from Indian point of view. India would rather conserve and focus its energies and resources to achieve its ambition of an emerging world leader than to fight a war, unless thrust upon it.

In such a scenario, there is a requirement to explore alternate options to get Pakistan to heed. One such option frequently opinioned by various think-tanks is the use of water as a tool against Pakistan to stop its policy of cross border terrorism and promoting militancy in Indian states. The same has often figured in the rhetoric which frequently builds up immediately post any major misadventure by Pakistan on Indian soils. However, in order to effectively exercise this option, there is a need to analyse it critically, research on the ways it can be achieved and identify strategies to manifest the same. This would require actions at various fronts viz capacity building, geo-political initiatives and diplomatic efforts besides others.

Research Questions

The leveraging of northern rivers towards conflict resolution with Pakistan would have to be as a part of a well worked out strategy to be implemented in a planned manner. Specific issues would have to be identified with respect to the options available to utilize the northern rivers to elicit a favourable response from Pakistan. The Research Questions to which answers need to be found are:-

- (a) What are the options available to India in respect of utilization of its northern rivers for conflict resolution with Pakistan?

(b) Which is the best option available and does India has the necessary capacities to implement the option?

(c) Is there a need to abrogate/ renegotiate the IWT?

Literature Review

Effects of rising water stress in the world resulted in a large number of researchers, academia and think-tanks working on the subject. The issue has also been discussed at length in respect of South Asia and the Indian sub continent. In the context of India and Pakistan, there is a huge rhetoric on the use of ‘Water as a weapon by India against Pakistan’ by Pakistani writers and columnists. Literature on the subject talks about the dependence of Pakistan on Indian rivers and effect of actions by India on Pakistani economy and social aspects. These papers and articles, however, do not address the dynamics of challenges faced by India in dealing with Pakistan and how water of its northern rivers can be leveraged as an effective tool by India to thwart Pakistan’s anti India activities. Salients of some of the literature reviewed on the subject are as under:-

Welle, Deutsche. *Water Wars : Are India and Pakistan Heading for Climate Change Induced Conflict?* (2019). The article brings out that dispute over the Kashmir region is hugely intertwined with water security. It sees India's threat to terminate the IWT as a bigger problem than the fear of military reprisals. It highlights that if India was to actually terminate the IWT that would be much more dangerous to Pakistan's survival. However, it is also brought out that China, as an upper riparian state, similar to India, is the mitigating factor. The author does not outline the ways in which India could leverage Indus waters to wage a water war with Pakistan. Though Chinese influence has been referred to in the article, the

same can be countered with focused efforts. That in itself is a case for further research and is not being dealt in this study.

Kaszubska, Katarzyna., & Bhogal, Preety. (2017). *The Case Against Weaponising Water.*

Post Sep 2016 Uri attack, Indian government planned to retaliate against it by building dams, canals and reservoirs on its northern rivers. The paper addresses the legal, economic and social implications of this decision. It brings out Pakistan's sensitivity and likely impact on its social, energy and economic environments and its potential for conflict between the two nations. The authors bring out the likely impact of construction of certain dams by India on Pakistan's social, energy and economic environment but do not define their likely cumulative effect. Timeframe for developing this capability has also not been talked about.

Zaman, Fahim., & Abubakar, M. S. (2016) : *Assessing India's Water Threat.*

The author analyzes the status of Pakistan as a lower riparian state and claims higher moral ground towards honouring of the Indus Water Treaty (IWT). However, soon reconciles to likely contrary actions by India in response to Uri like attacks. He has observed the likelihood of India constructing number of hydel projects and storage capacities which could be used to flood or starve Pakistan for limited periods with varying effects. The paper is premised on the attitude of previous Indian governments' reactions and assumes India to continue abiding with the IWT despite extreme provocations by Pakistan. While discussing likely construction of water storing structures, dams and hydel projects, the author is not able to outline the impact that these would bear, when utilizing them aggressively against Pakistan.

Shahzar, E. S. (2018). *India's Next Weapon.*

The author brings out the so far unnoticed development in Afghanistan of construction of the ambitious Shahtoor Dam in Char Asiab

district of Kabul funded by India. He analyses the project as a veiled endeavour by India to further exasperate Pakistan in its water woes in conjunction with its efforts at hand through construction of various dams on the western rivers flowing into Pakistan. The author brings to light India's effort to heighten water scarcity in Pakistan. It falls short of giving out how it can be integrated with the efforts by India to use water as a weapon against Pakistan.

Other Literature on The Subject. In addition to the above, the following literature was referred to:-

- (a) Indus Water Treaty: Ministry of Water Resources, River Development and Ganga Rejuvenation.
- (b) Chellany, B (2014). Water, Peace and War. New Delhi: Oxford University Press.
- (c) IDSA. (2010). Water Security for India: External Dynamics. New Delhi: IDSA
- (d) Singh, H. (2017). Water Availability in Pakistan. Indian Defence Review Vol II, 3.
- (e) Kumar, M. D.(2010). Managing Water, In River Basins. New Delhi: Oxford University Press.
- (f) Maestu, J.(2013). Water Trading and Global Water Scarcity, International Experiences. London: RFF Press
- (g) Chaturvedi, A.K.(2013). Water A Source for Future Conflicts. New Delhi : Vij Books
- (h) Chaturvedi, A.K.(2018). Indus Water Treaty: An Appraisal: Vivekananda International Foundation. New Delhi
- (j) Bakshi, Gitanjali., and Trivedi, Sahiba. (2011). Indus Equation. Mumbai: Strategic Foresight Group.

- (k) Wolf, A. T., and Newton, J. T. (2008). Case study of transboundary dispute resolution: The Indus water treaty. Department of Geosciences, Oregon State University: Corvallis, OR, USA.
- (l) Pulwama attack and Indus Waters Treaty: does India hold all the cards?. (2019). The Hindu. Retrieved 28 April 2019.
- (m) Wasi, Nausheen. (2009). Harnessing the Indus Waters Perspectives from Pakistan.
- (n) Jamal, Haseeb. (2017). Impact of Indian Dams in Kashmir on Pakistani Rivers. Retrieved from <https://aboutcivil.org/impact-of-Indian-dams-in-Kashmir-on-Pakistani-rivers.html>
- (o) Mirchandani, Maya.(2019). Indus Treaty. Why India cannot afford to fight fire with water. Retrieved from <https://www.orfonline.org/research/48487/>
- (p) Sattar, Uzair., & Atrey, B. (2019). Hydropolitics in the Indus Basin:; The Indus Water Treaty & Water Mismanagement in Pakistan. Retrieved from <http://yris.yira.org/essays/3101/>
- (q) Johnson, Keith (2019). Are India and Pakistan on the Verge of a Water War? Foreign Policy.
- (r) Sharma, Pranay. (2019). Using Water As Weapon? Or As A Solution For Peace? India On A Slippery Pitch. Retrieved from <https://www.outlookindia.com/magazine/story/india-news-using-water-as-weapon-or-as-a-solution-for-peace-india-on-a-slippery-pitch/301976/>

Methodology

Research Design

The research conducted has been Exploratory and Descriptive in nature through study of various secondary sources i.e. books, research papers, articles and reports on the subject. A bibliography is appended at the end of the dissertation. Personal interaction has been carried out with Dr Uttam Sinha, Research Fellow at the Institute for Defence Studies and Analyses and domain expert on the subject. Primary inputs have also been obtained through a questionnaire administered to intellectuals with fair to good knowledge of the topic. The questionnaire has been answered by 144 respondents. The views of the respondents have been analysed to reinforce the findings of the research. The Hypothesis has been validated in light of inputs collated during the research from the primary and secondary sources.

Chapterisation. The layout of the research study is as under:-

- (a) Chapter I: Introduction, Literature Review and Methodology of Research. This chapter gives out the statement of the problem, justification for the research, Research Objectives, Research Questions and Literature Review. It also gives out the research methodology and the limitations of the study.
- (b) Chapter II: Indus River Basin and Indus Water Treaty. This chapter analyses the Indus river basin and its waters. It studies the provisions of the IWT and gives out the contentious issue relating to the Treaty and the perspective of India and Pakistan on the Treaty.
- (c) Chapter III: Northern River Waters: A Strategic Asset. This chapter brings out the precarious water situation in Pakistan and the relevance of IWT in the

changed socio economic scenario in the changed environment. It is this changed paradigm that has put the treaty, in its current form, under pressure.

(d) Chapter IV- Leveraging Northern Rivers As a Tool For Conflict Resolution With Pakistan. The chapter discusses methods which can be employed by

India to leverage the waters of its northern rivers for conflict resolution with Pakistan.

(e) Chapter V: The Plausible Approach and Capacity Building. The likely approach and the capabilities that need to be built to meet the desired end state are worked out in this chapter.

(f) Chapter VI: Options For India. This chapter studies the spectrum of options available to India and their pros and cons. It analyses the responses to the questionnaire and validates the hypothesis.

(g) Chapter VII: Prognosis and Way Ahead. In light of the study, this chapter gives the way forward for the nation to use its northern rivers to achieve the desired response

Limitations of the Research

Almost all the countries are facing issue of water shortage. The South Asian economies are experiencing the same at an alarming rate. Water dynamics between nations sharing water bodies are governed by their position in the riparian status. As per the present geo-political alignment, Pakistan is a Chinese ally. China can and has established a number of water control mechanisms on Yarlung Tansgpo (Bhramaputra River) which can significantly affect and influence the availability of water in India. In the event of India's usage of its northern rivers as a tool against Pakistan, reactions from the world order and China in particular would have implications for India. However, these can be countered through charged

diplomacy and requisite confidence building measures with concerned neighbours and the world community. This in itself would be a scope for a separate research and is therefore not being dwelled upon in detail in this research.

The researcher has undertaken the research study as part of the 10 month Advanced Professional Programme in Public Administration at Indian Institute of Public Administration, New Delhi. The research work has been carried out in addition to the elaborate curriculum of the advanced programme and hence has had the limitation of time for intensive research of the topic.

CHAPTER II- INDUS RIVER BASIN AND INDUS WATER TREATY

“The consequences for humanity are grave. Water scarcity threatens economic and social gains and is a potent fuel for wars and conflict.”

Ban Ki Moon, UN Secretary General (2007)

Indus River is the lifeline of Pakistan. Beginning in a mountain spring, it is fed with glaciers and rivers in the Himalayan, Karakoram and Hindu Kush ranges. In the plains, its left bank tributary is the Panjnad which itself has five major tributaries, namely, Chenab, Jhelum, Ravi, Beas, and Sutlej. Its principal right bank tributaries are Shyok, Gilgit, Kabul, Gomal, and Kurram. The river has a total drainage area exceeding 1,165,000 km² (450,000 sq mi) of which 56% lies in Pakistan and the balance 44% in India, China and Afghanistan. Pakistan draws almost 85% of its fresh water requirement from the Indus River. It provides key water resources for Pakistan's economy – especially the *breadbasket* of Punjab province, which accounts for most of the nation's agricultural production, and Sindh. It also supports many heavy industries and provides the main supply of potable water in Pakistan. In essence it is Pakistan's jugular vein forming the mainstay of agriculture and economy of nation.

In August 1947, when India and Pakistan became independent, the boundary was drawn right across the Indus Basin leaving Pakistan as the lower riparian state. The important headworks at Madhopur and Hussainiwala were left with India which could regulate the waters flowing to Pakistan since its river linking canal system were yet to be constructed. The issue was aggravated when India cut off water supplies to West Pakistan by diverting water from Ravi, Sutlej and Beas Rivers. For five weeks Pakistan received no water, it was

the intervention of World Bank in 1952, that the frame work of the Indus Water Treaty (IWT) was carved out and proposal was put forward to both India and Pakistan in 1954⁵. The Treaty was signed by India and Pakistan at Karachi on 19 September 1960, by the then Prime Ministers, Jawaharlal Nehru and Mohammad Ayub Khan along with W A B Illif of the World Bank. The treaty came into effect from 1st April, 1960.

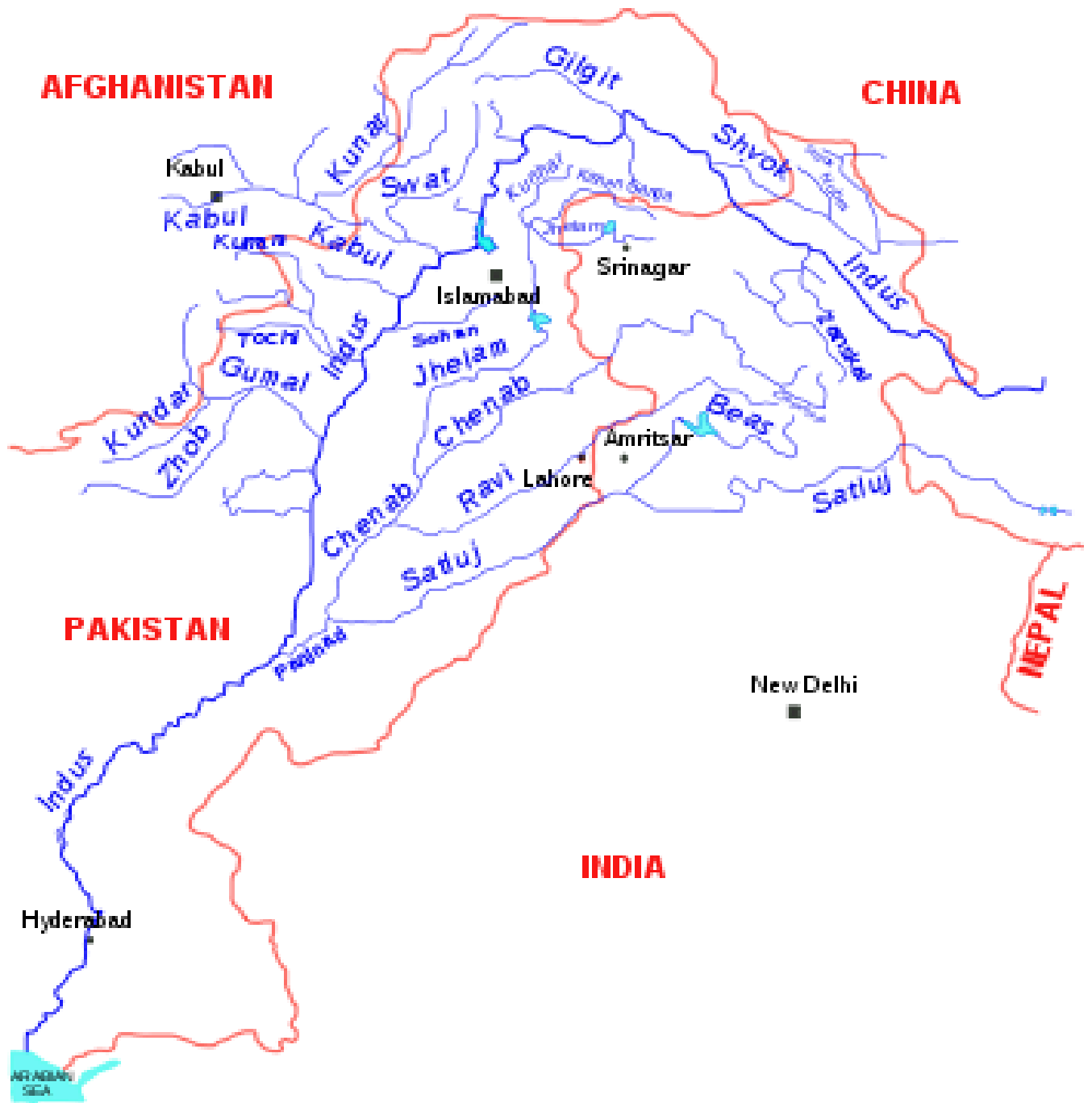
Figure 1 : Rivers of Indus Valley Basin



Provisions of The Indus Water Treaty

The Treaty set up a transitional period of ten to thirteen years after which the usage and distribution of the waters of the rivers of Indus river basin were formalized. A permanent Indus Commission was also set up comprising engineers of the respective countries to monitor violations and smoothen out differences that may arise. IWT is a complex instrument comprising 12 articles and 8 annexures.

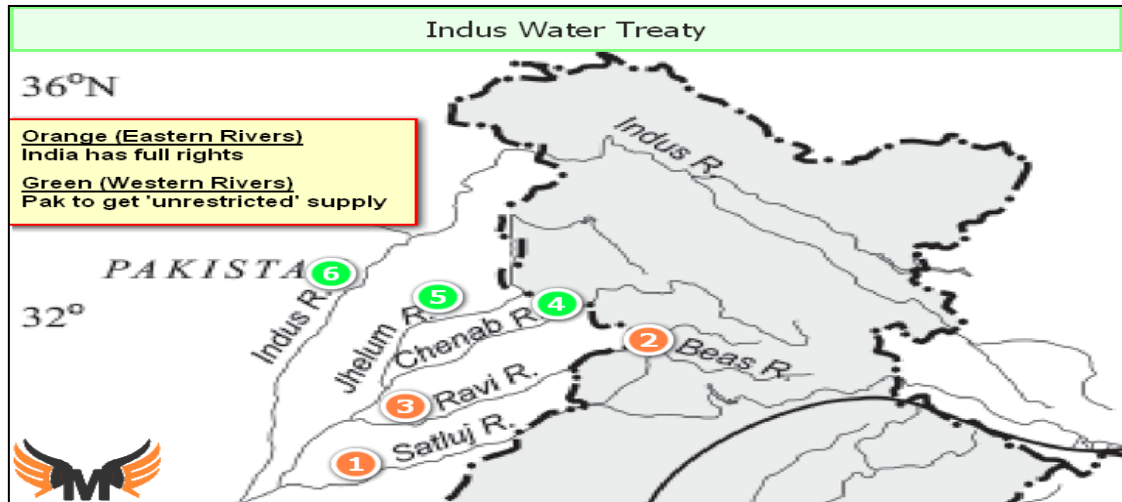
Figure 2 : Composition of Indus Valley Basin



The brief on contents of IWT-1960 is attached as Appendix 'A'. It principally involved the following⁶ :-

- (a) Exclusive use of eastern rivers (Sutlej, Beas and Ravi) by India and similarly exclusive use of western rivers (Chenab, Jhelum and Indus) by Pakistan.

Figure 3 : Distribution of Rivers Under IWT



- (b) Under the Treaty, India is under obligation to let the waters of the western rivers flow except for the domestic, non-consumptive, agricultural use and generation of hydro-electric power as specified.
- (c) India has been permitted to construct storage of water on western rivers up to 3.6 Million Acre Feet (MAF).
- (d) India has been permitted agricultural use of 7,01,000 acres over and above the Irrigated Cropped Area (ICA) from the western rivers.
- (e) India and Pakistan to create a permanent post of Commissioner for Indus Waters.

(f) Both sides are required to exchange information related to river flows observed by them, not later than three months of their observation and to exchange specified information on agricultural use every year.

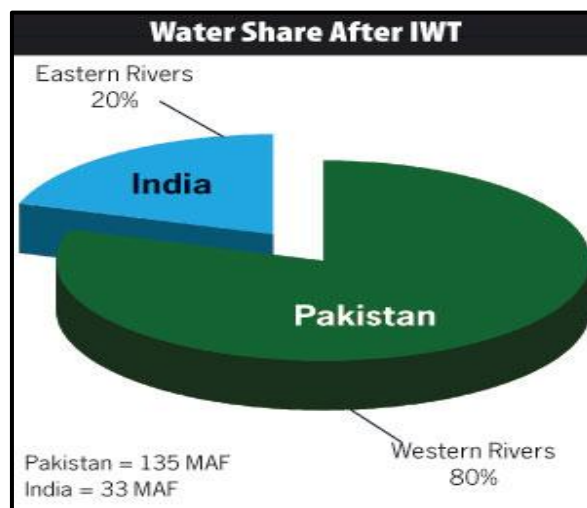
(g) India is under obligation to supply information of its storage and hydroelectric projects as specified.

Water Share of Rivers as per IWT. Under the IWT, India agreed to set aside 80% of the waters of the six river Indus system for Pakistan, keeping for itself just the remaining approx 20%. The share of river waters as per IWT is as follows:-

| | Eastern Rivers (India) | Western Rivers (Pakistan) |
|--------------------------------------|--|-------------------------------|
| Average Inflow of Indus River System | 33 Million Acre Feet (MAF) | 135 MAF |
| Share of India and Pakistan | India – 40.4 Billion Cubic Metres (BCM) (19.48%) | Pakistan - 167.2 BCM (80.52%) |

Table 1 : Water Share Between India and Pakistan as per IWT

Figure 4 : Water Share as per IWT



Agricultural Use Permitted to India from Western Rivers. Over and above, 6.42 lakh acres being irrigated by India from the western rivers on the effective date ie 01 April 1960 and the permissible withdrawals, India is entitled to irrigate additional ICA from the western rivers as per details given below:-

| River | Indus | Jhelum | Chenab | Total |
|--------------|--------|----------|----------|----------|
| ICA in acres | 70,000 | 4,00,000 | 2,31,000 | 7,01,000 |

Table 2: Permissible ICA for India as per IWT-1960

Storage Permitted to India on Western Rivers. The Treaty provides for the utilization of the waters of the western rivers to Pakistan, however, India is permitted the non-consumptive use of water from these rivers including agricultural and domestic use. The limited storage capacities could be used by India for power generation provided the used water was finally returned to the natural flow. This aspect of the Treaty has led to controversies relating to several projects planned or being pursued by India in J&K. In accordance with the IWT, the aggregate storage capacity of all single purpose and multipurpose reservoirs which may be constructed by India after the effective date is to be limited to following:-

| River System | Conservation Storage Capacity (MAF) | | Flood Storage Capacity (MAF) |
|------------------------------------|-------------------------------------|------------------------|------------------------------|
| | General Storage Capacity | Power Storage Capacity | |
| Indus | 0.25 | 0.15 | Nil |
| Jhelum (excluding the Jhelum Main) | 0.50 | 0.25 | 0.75 |
| Jhelum Main | Nil | Nil | |
| Chenab (excluding Chenab Main) | 0.50 | 0.60 | Nil |
| Chenab Main | Nil | 0.60 | Nil |
| Total | 1.25 | 1.60 | 0.75 |

Table 3 : Distribution of Storage Capacity to India

Indian Utilisation of Water Resources.

Eastern Rivers. Envisaged storage reservoirs for harnessing 33 MAF of eastern rivers are available in India. Against 17480 MW hydro electric potential (installed capacity), projects having about 7299 MW installed capacity are operational and projects having 4411 MW installed capacity are in different stages of completion.

Western Rivers. Reference Table 4 below:-

- (a) Since India has not built any conservation storage on western rivers, India can develop irrigation by withdrawals from river flow only within the restricted area of 2,70,000 acres over and above the area as on effective date of the Treaty. India has been able to irrigate an area of 808,231 acres against permissible 912,477 acres as per last input available in public domain⁷.

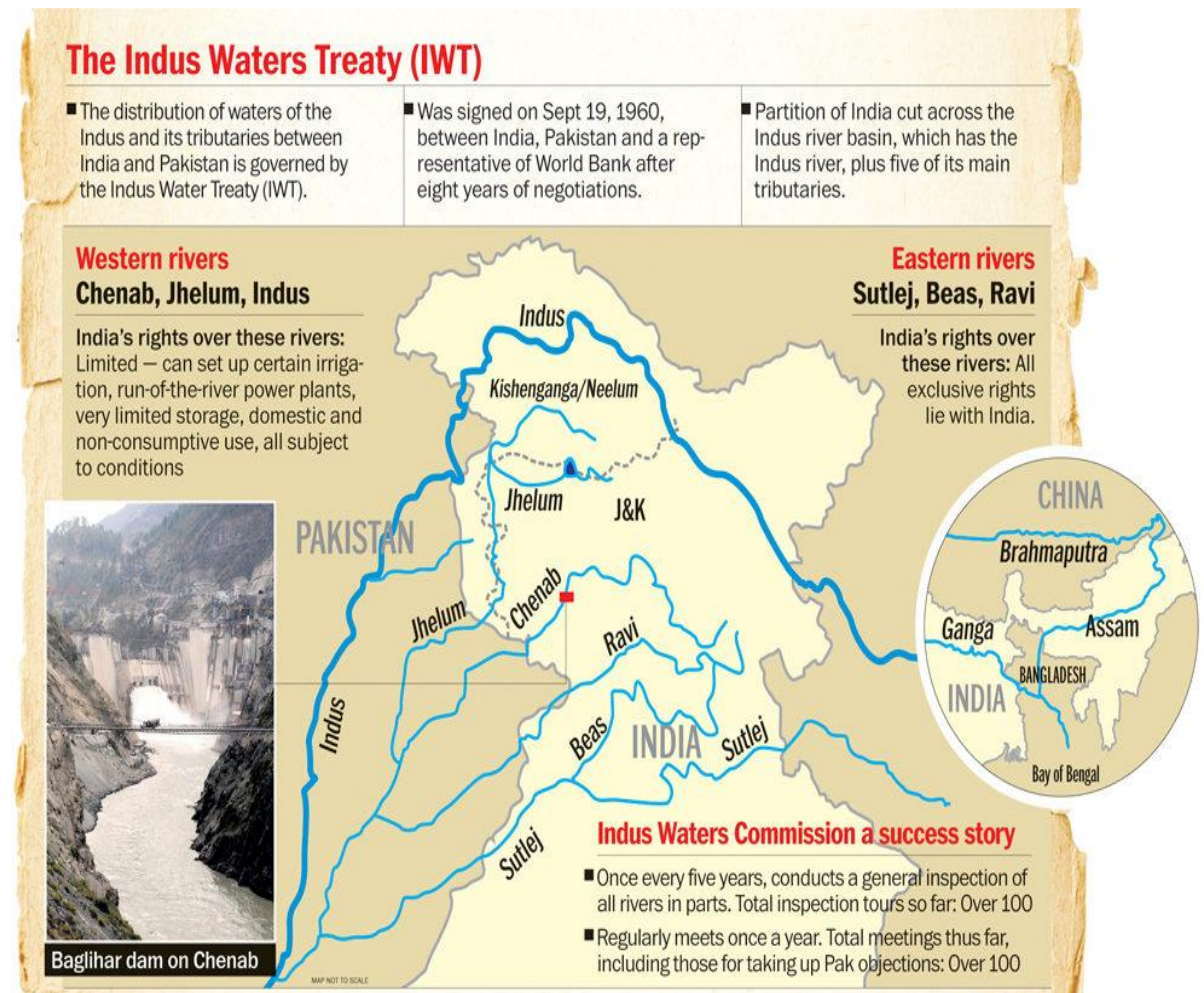
| Basin | ICA as on 01 Apr 1960 | Additional Permissible (Acre) | Net Permissible (Acre) | Total Achieved |
|--------|--------------------------|-------------------------------------|------------------------------|-------------------|
| Indus | 42,179 | 70,000 | 1,12,179 | 51,256 |
| Jhelum | 5,17,909 | 1,50,000 | 6,67,909 | 6,49,625 |
| Chenab | 82,389 | 50,000 | 1,32,389 | 1,07,350 |
| Total | 6,42,477 | 2,70,000 | 9,12,477 | 8,08,231 |

Table 4: Comparison of Utilised ICA by India

- (b) Jammu and Kashmir has a potential to produce 16,475 MW of hydro power as per the assessment made by the Central Electricity Authority (CEA). Out of this total, 11,283 MW of hydro power can be produced on Chenab, followed by 3,084 MW on Jhelum and 1,608 MW on Indus river. Against identified 16,475 MW of installed capacity from western rivers, projects having installed capacity of about 3,264 MW have already been completed. Four

projects - Dah (9 MW), Hanu (9 MW), Parnai (37.5 MW) and Lower Kalnai (48 MW) are under different stages of execution. Chenab Valley Power Project has also been entrusted to implement three hydro power projects in Kishtwar including 1,000 MW Pakal Dul, 624 MW Kiru and 540 MW Kwar⁸.

Figure 5: IWT – Key Points



IWT - Perspective and Viewpoints

The IWT is considered to be an outstanding international instrument of dispute resolution and a shining instance of settlement of disputes between upper and lower riparian states. It demonstrated that the most complicated international disputes can be resolved if

high stakes are involved and both parties are seriously concerned about resolving them⁹. Of the over 157 international freshwater treaties signed between riparians in transboundary basins in the last 60 years, IWT is considered the best example of permanency over water-sharing¹⁰. However, after the dying down of the initial euphoria and with the passage of time there are varying perspectives of both the signatories of the Treaty.

Pakistani Viewpoint

Sense of Loss. Since the very beginning, Pakistan has been divided over the outcome of the IWT. While many hailed it as a diplomatic victory, a strong section in Pakistan felt that they had lost two additional rivers, Sutlej and Ravi to India in addition to Beas river which was already awarded through the Radcliffe award¹¹.

Perceived Hydro Offensive. Pakistan maintains that since the signing of the Treaty India has repeatedly violated it a number of times. While the Indus Water Commission has been able to articulate the disagreements in an amicable atmosphere, there is distinct feeling in Pak that India has launched a 'hydro offensive' through the throttling of the rivers under the IWT. It has therefore, without fail, objected to every single project planned / developed by India on the western rivers, often blindly.

Suspicion. Since inception, IWT has suffered from both mistrust and 'lower riparian fears'. Pakistani intellectuals have repeatedly built the rhetoric of it being deprived of its legitimate waters and over a period of time built a strong narrative around the idea.

Indian Viewpoint

While India treated the water issue with Pakistan as a technical and engineering problem, Pakistan exploited it as a political tool. It sought and succeeded in extracting huge financial international assistance, including 62 million pounds from India, using the

geopolitical environment to its advantages¹². These funds assisted Pakistan in constructing defence oriented canals like Marala Ravi Link Canal and Ichhogil Canal. It got the benefit of the above infrastructure being created by 'external funding' and exposure to some of the world's best engineers and technology.

Division of Waters. India was too liberal with Pakistan, by allowing complete use of waters of western rivers, particularly when eastern rivers allotted to India carried only 20 percent of total flow as against 80 percent in western rivers. It was not the number of rivers but quantity of waters which should have been distributed.

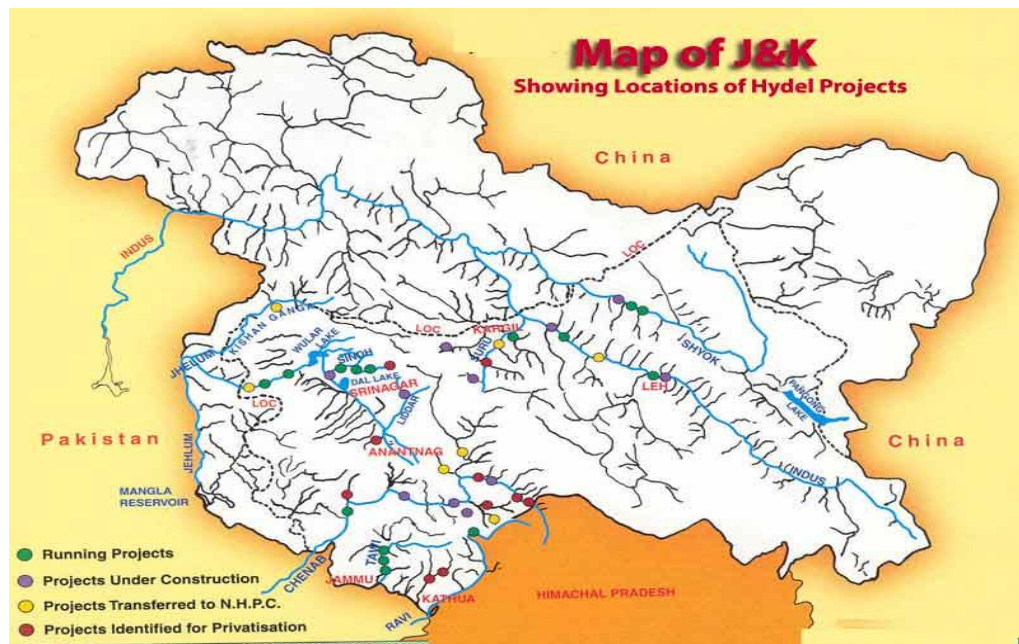
Alienation of J & K. Water shortage coupled with power shortage has caused apprehensions amongst many investors and has retarded the growth of the Union Territory which has put it behind by an estimated Rs 6500 crores annually. In addition, the area that the state could bring under cultivation has been restricted as the 'diversion of water' is not permitted under the IWT. Thus no elaborate canal system can be built in J&K and its far flung areas cannot be used for extensive agriculture. People in J&K deduce that unlike Pakistan (which received both water and royalties) and India (which received water of Eastern rivers), J&K was deprived of both water and any attendant royalties¹³.

Waters of Chenab River. Chenab river flows for half its length through India and thus the principles of natural justice command a much greater right / share on its water consumption to India than is permitted by the Treaty. The internationally accepted Helsinki Rules, put forward equitable utilisation of waters of an international drainage system taking into account factors such as extent of drainage basin and its hydrology, population dependent on the waters of the basin and economic and social needs of each basin

state. As per these postulates, India should ideally have got 43 percent share in the waters of the Indus basin¹⁴.

Restrictions of River Hydroelectric Projects. With the prohibition on construction of storage reservoirs, ‘run of the river’ hydro projects were only feasible on the western rivers. These projects are costlier in construction and operation besides having reduced power generation capacity (upto 50%) during winter months. Therefore, J & K despite having a great hydropower potential, is deficient in power¹⁵.

Figure 6: Hydroelectric Projects in J&K



Implications of IWT on Rivers in J&K. As a result of restrictions of IWT on the usage of eastern rivers, originating in India, major implications are as follows:-

- (a) IWT has restricted the utilisation of Chenab river waters in J&K.
- (b) All dams, Salal, Baglihar to present Ratle project have been objected to by Pakistan thus affecting the pace of projects.

(c) IWT clauses have increased the problem of siltation, as de-silting structures are not allowed. In Salal Dam, the reservoir has silted up to crest level within five years of operation and bed of the river got elevated. The capacity has been reduced from 284 MCM to 9 MCM¹⁶.

(d) Annual loss due to the absence of water storage facilities on the rivers in J&K amounts to approximate Rs 6,000 crore¹⁷.

(e) IWT has restricted exploitation of hydroelectric potential of Chenab and other rivers. Total economic potential of Chenab Basin has been estimated to the tune of 3600 MW (firm) & installed capacity of 11,400 MW. There are three major projects as on date with many other in the pipeline, which have yet to materialise.

Hydroelectric Projects Under Contention Due to IWT

Baglihar Hydrel Power Project¹⁸

Figure 7: Baglihar Hydrel Project on Chenab River

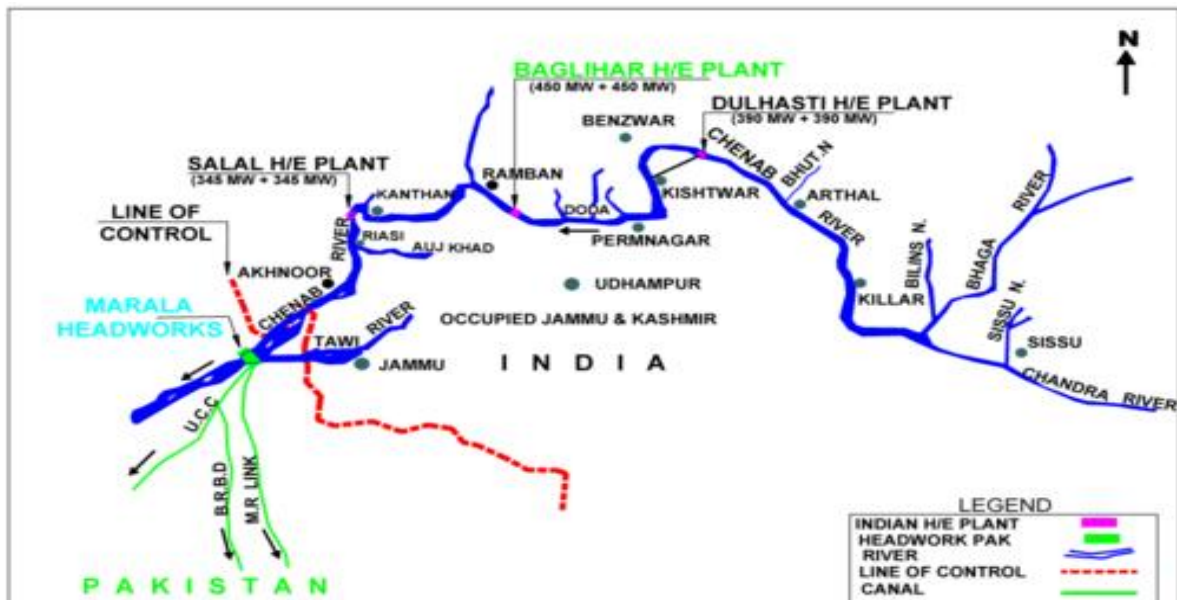


Figure 8 : Baglihar Project Dispute



The Baglihar hydropower plant is a run of river plant with a capacity of 450 MW stage. The project was conceived in 1992 and construction began in 1999 on Chenab river. Various objections were raised by Pakistan immediately on commencement of construction. On 15 January 2005, the government of Pakistan requested World Bank (WB) to appoint a Neutral Expert (NE) stating that differences had arisen between India and Pakistan under the Article IX (2) of the Treaty, relating to Baglihar Project. After consultation with the Parties under the provisions of the Treaty, on 12 May 2005 the Bank appointed Mr. Raymond Lafitte, Professor at the Federal Institute of Technology of Lausanne, Switzerland as the Neutral Expert (NE). Pakistan's objections related to the project configuration, dam's height, likely water blocking, storage capacity of the reservoir and gated spillway. The objections raised by Pakistan and the corresponding replies as well as determinations by the Expert Determination led by NE dated 12 February 2007 are summarized below¹⁹:-

Table 4 : Determinations Given by Neutral Expert

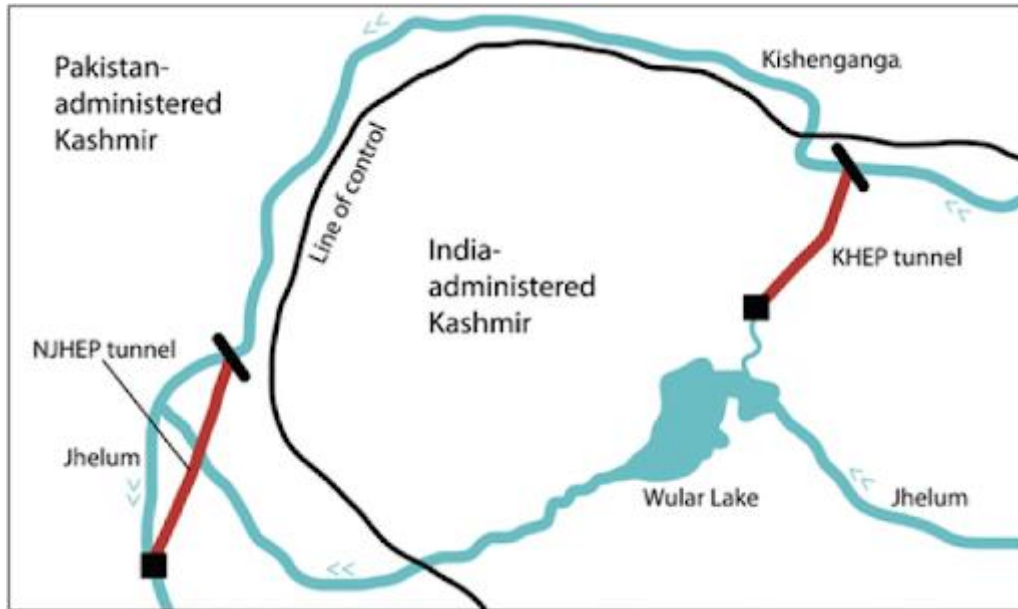
| Context | Determination | Effect |
|--|--|--|
| Peak discharge value of design flood | Peak Discharge of the design flood retained as 16,500m ³ /s. | Value as suggested by India retained. |
| Type of Spillway | Baglihar Plant requires a gated spillway | Indian design approved |
| Level of Spillway gates | Spillway gate located at 821m asl is the highest level consistent with sound economical design and satisfactory construction and operation of plant. | India's design of spillway gate at 821m asl accepted |
| Dam elevation and its ability of artificial raising of the water level | Freeboard above pondage level should be only 3.0 m instead of 4.5m as deigned. Dam crest elevation required to be 843.0 m asl instead of 844.5m asl | India needs to reduce the dam crest elevation by 1.5 m. |
| Volume of pondage | Max pondage level should be fixed at 32.56Mm ³ and the dead storage level at 836 m asl | Increase of one m of dead storage level from the Indian design required. |
| Level of power intake | Intake level for power generation fixed at 821m instead of designed value of 818m asl. | Intake level as designed by India is not at the highest possible level. |

Kishanganga Hydroelectric Project²⁰

The run-of-the-river 330 MW hydroelectric project upstream of Muzaffarabad in India diverts water from the Kishanganga river (referred to as Neelum river in Pakistan) to a power plant in the Jhelum river basin. It is located 5 km north of Bandipore in J&K. Construction on the project began in 2007 and was expected to be complete in 2016. Pak objected to the project citing that the diversion of the water of Kishenganga river to Jhelum would reduce the flow of water in Jhelum in Pak occupied Kashmir (PoK) by 27 percent, affecting power generation capacity of the Neelum-Jhelum hydropower project in Pakistan as

also ruin the Neelum Valley and reduce Pakistan's total water availability from 154 MAF to about 140 MAF.

Figure 9 : Kishanganga Hydrel Electric Project, J&K



Construction on the dam was temporarily halted by Hague's Permanent Court of Arbitration (CoA) in October 2011 due to Pakistan's protest. In December 2013, the Court ruled that India could divert water for power generation while ensuring a minimum flow of 9 MAF at all times in the Neelum River so as to preserve the eco-system in the Neelum Valley. This is just a tenth of the 100 MAF demanded by Pakistan²¹.

Salal Hydro Electric Project.

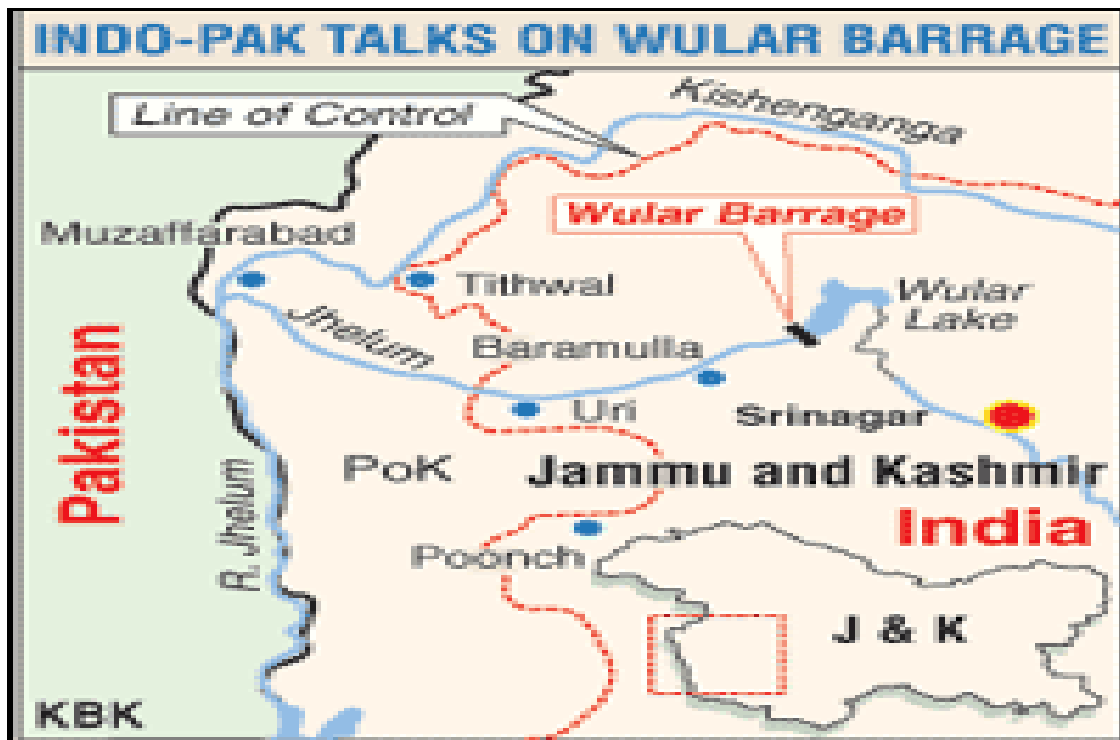
It is a run of river power project on the Chenab River in the Reasi district of the J & K. It was the first hydropower project built by India in Kashmir under the IWT regime, after having reached a bilateral agreement with Pakistan in 1978. India made significant concessions in the design of the dam, reducing its height, eliminating operating pool, and plugging the under-sluices meant for sediment management, which damaged its long-term sustainability. The dam silted up in five years, and has essentially converted the reservoir

into an elevated river bed. The situation is reported to be alarming and the future of the project uncertain. During winters when water level goes abysmally down, it does not generate much power, according to a state official. However, with all the remedial measures being applied, the power generation has been kept up, even though it is considerably lower than the peak performance achieved in early 1990s.

Wullar Barrage/ Tulbul Navigation Project²².

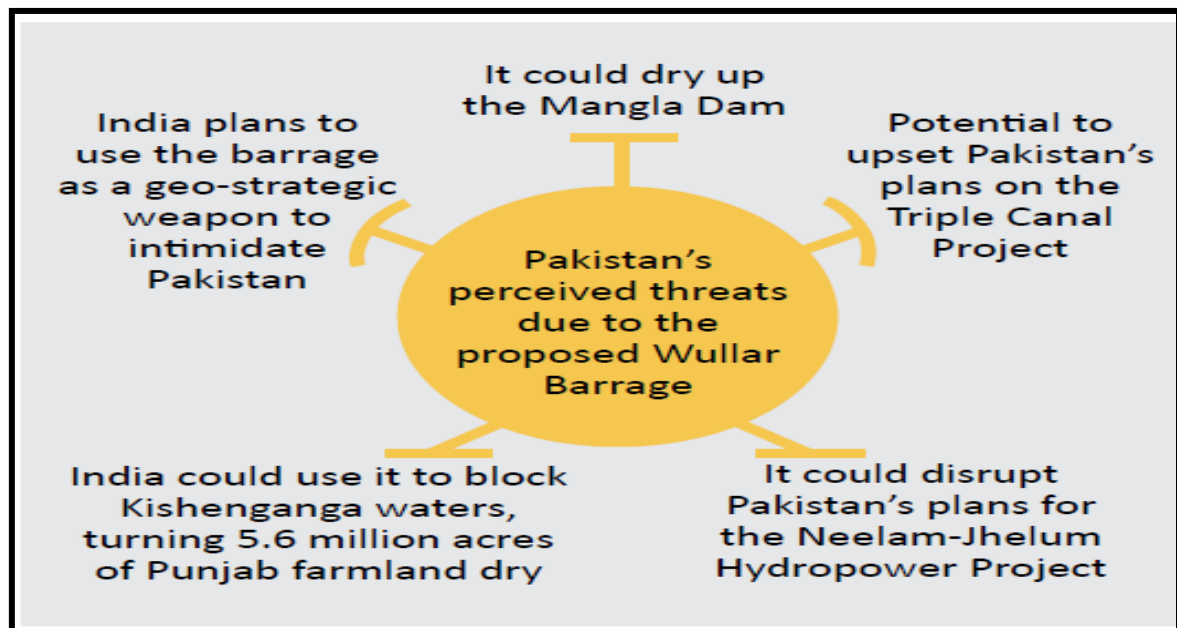
The Tulbul Navigation Project, as termed by India was objected to by Pakistan who referred to it as Wullar Barrage and cited it as a violation of provisions of IWT. India planned the project to improve the navigability of the Jhelum river between Sopore and Baramulla in a 20 km stretch during the winter season when water flow reduced making the average depth of water to 2.5ft only. To alleviate this problem, India planned to construct a barrage at the outfall of the lake into the river.

Figure 10 : Wular Barrage on Jhelum



On In 1986, Pakistan referred the case to the Indus Commission leading to the halting of the project in 1987 by India. While Pakistan viewed the project as a storage work, India stated that the construction was a navigational project. Pakistan based its objections on Article I (11) and Article III (4)²³ of the IWT that prohibits both parties from undertaking any ‘man-made obstruction’ that may cause a change in the volume of water and prohibits India from storing any water on the western rivers without approval from Pakistan. Pakistan maintained that there is no need to store additional water as the existing water levels in the Wullar Lake are sufficient for small boats to navigate between Srinagar and Baramula. Internally, Pakistan has its own apprehensions as diagrammatically illustrated below²⁴:-

Figure 11 : Pak Perception Threats Due to Wular Barrage

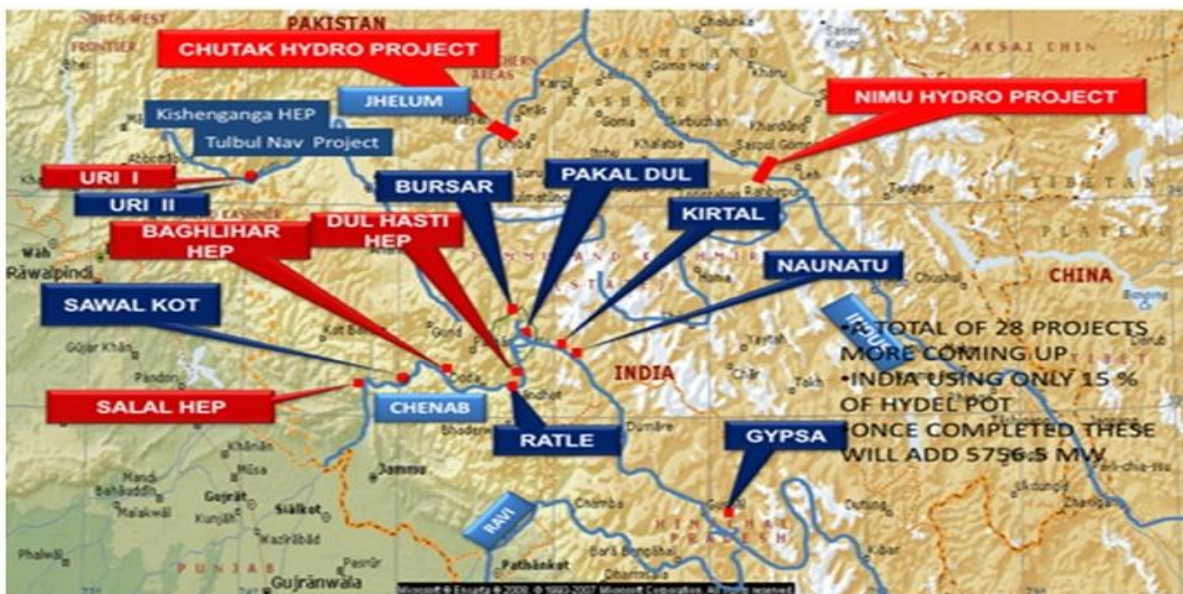


The project remains the longest lasting water dispute between India and Pakistan and the project is still not complete.

Future Planned Indian Projects

A number of new projects are planned by India in addition to the 3,263.46 MW²⁵ already harnessed on three western rivers from Jhelum, Chenab and Indus. The ongoing fresh projects are Sawalkote (1,856 MW), Kirthai I (390 MW), Kirthai II (930 MW), Pakal Dul (1,000 MW), Kwar (540 MW), Kiru (624 MW) and Bursar (800 MW) in the Chenab basin and the multi-purpose Ujh project (212 MW) in the Ravi basin²⁶. Their combined installed capacity is projected to be around double the current installed hydropower generation capacity in the state. Most of the new projects are in detailed project report (DPR) stage. A total of approx 135 big or small dams; 24 on the Indus, 77 on the Jhelum and 34 on the Chenab planned to build²⁷. Despite adhering to the provisions of IWT, India can expect Pak to raise objections to almost every project on the western rivers. It also claims that while individually the storage capacity of Indian projects on western rivers might adhere to the provisions of IWT, their cumulative capacity will allow India to affect the flow of western rivers to Pakistan, especially during the dry season when the flow is extremely low²⁸.

Figure 12: Existing/ Under Construction/ Proposed Hydro Projects in J&K



In the Figure above, projects in red are those which have already completed, dark blue are those which are either under construction or are under planning and light blue are those which will be taken up subsequently.

So while India tries to justifiably harness the potential of its western rivers to meet its legitimate requirement of water and hydroelectricity, within the ambit of IWT, it will always and most certainly continue to have objections raised by Pakistan. IWT was signed with the enthusiastic hope of bringing in all round development in Indo - Pak relations with resolution of outstanding problems including Kashmir. Unfortunately, it has ended up doing quite the opposite.

CHAPTER III- NORTHERN RIVER WATERS: A STRATEGIC ASSET

“Agreement on Kashmir, the source of water, on which Pakistan’s life and death depends, is vital otherwise nuclear war is hanging as the sword of Damocles.”

- Former IRSA Chairman Fatehullah Gandapur (2011)

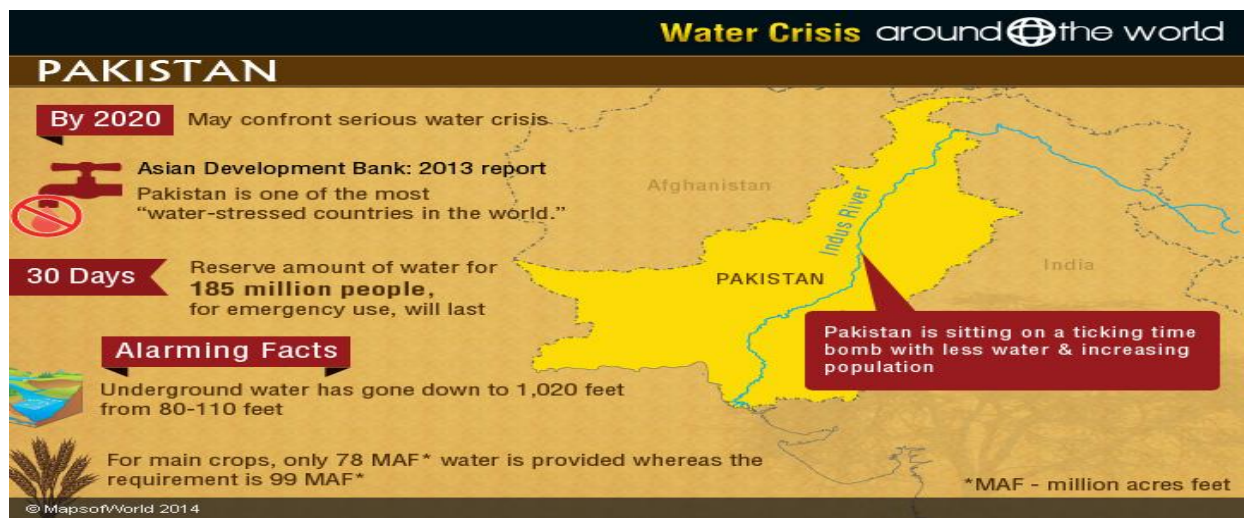
Water Situation in Pakistan

The waters of the Indus river basin form the life line for Pakistan and are vital to the nation’s growth and survival. 80% of Pakistan's 21.5 million hectares of farmland is irrigated from this river and the canals built from the river. Between 1951 and 2015, per capita water availability in Pakistan declined from 5,260 cubic metres per inhabitant to 940 cubic metres per inhabitant. According to UNDP, Pakistan will face water scarcity by 2025. Water scarcity is already stoking violent conflicts in the country, which is already battling insurgency²⁹. Three out of four Pakistani provinces blame the most populous and politically empowered province, Punjab, for usurping their water sources. New studies have indicated that growing population (300 million by 2020) in Pakistan will require additional 25 million acre feet (MAF) of water by 2020. Hence Pakistan, even after feverish water resources building activity in next 10 years, will be 10 MAF water short. Owing to depletion of water supply from eastern rivers (Ravi, Beas and Sutlej) under control of India as per existing water sharing arrangements, Pakistan had to construct canals to draw waters from Chenab and Indus into Ravi and Sutlej for Punjab. Consequently, the water that used to flow into Sindh is now being diverted into Punjab and this is a major source of unrest/discontent in the agrarian society of Sindh. Insufficient flow in Indus in the lower reaches is unable to prevent

sea intrusion in the Indus estuary. All these factors and related retardation in development activities have manifested into worst socio-economic impact on the Sindh province. Sindh has as a result launched massive agitations³⁰.

During successive stages of development of the irrigation systems by Pakistan, emphasis was put on maximizing the extent of irrigated land. In the Indus valley, as in all other flat valleys in the world, the natural surface and subsurface drainage is poor. Since there were not enough drainage channels, most of the rainwater and canal seepage percolated down to lower depths. As time passed, the groundwater table got higher and higher by steps, and finally, in the 1950s and 1960s it came close to the ground surface and has thus caused water logging in many large areas. Proper aeration of the soil could not take place and the capillary action and evapo-transpiration moved salts from the subsurface up to the root zone of the crops and to the land surface. Thus, once-fertile lands so deteriorated that crops could no longer be grown. In the former Punjab area in Pakistan, 5 million hectares have already gone out of cultivation due to salinity caused by water logging, 690,000 hectares are in an advanced stage of deterioration, and 2 million hectares are affected to a lesser degree.

Figure 13 : Water Crisis Situation in Pak



Pakistan is therefore facing desertification owing to water logging and soil salinity consequent to which its present day yields are one of the lowest in the world. The change in grazing practices has virtually reduced some areas in its Cholistan desert to sand dunes. More than one-third of the country has been classified as under risk of desertification (45 million hectares). This is when, Pakistan is enjoying unrestricted use of western rivers (Chenab, Indus and Jhelum), Kabul R and overflow of eastern rivers.

Pakistan capability to fill its defensive canal and water obstacles is also dependent on Chenab river and will be severely affected if India constructs regulating/ control structures on the river in J&K.

A majority of water for irrigation as well as domestic use in Pakistan is derived from groundwater sources. However, as these groundwater sources decline, there has been an increasing dependence on surface water flow. Currently, Pakistan has 68BCM of groundwater reserves, spanning across 16.2 million hectares of land, and already 36% of these reserves are considered highly saline – unfit for drinking purposes as well as irrigation.

Groundwater levels

Relevance of IWT.

The Treaty, to start with, is highly unbalanced in favour of Pakistan as it does not take into account other rivers joining Indus from West like Kabul, which has bearing on availability of water in Indus. The Treaty clubs J&K with India and PoK with Pakistan, and as such the aspirations and needs of the people of J&K have not been taken care of by the Treaty. The overall scenario in both India and Pakistan has undergone a sea change in almost all facets since the signing of the IWT in 1960. These changes include the size of population

dependent on the waters of the Indus river system, the requirement of waters for agriculture and power generation, socio economic usage, climate change and precipitation levels

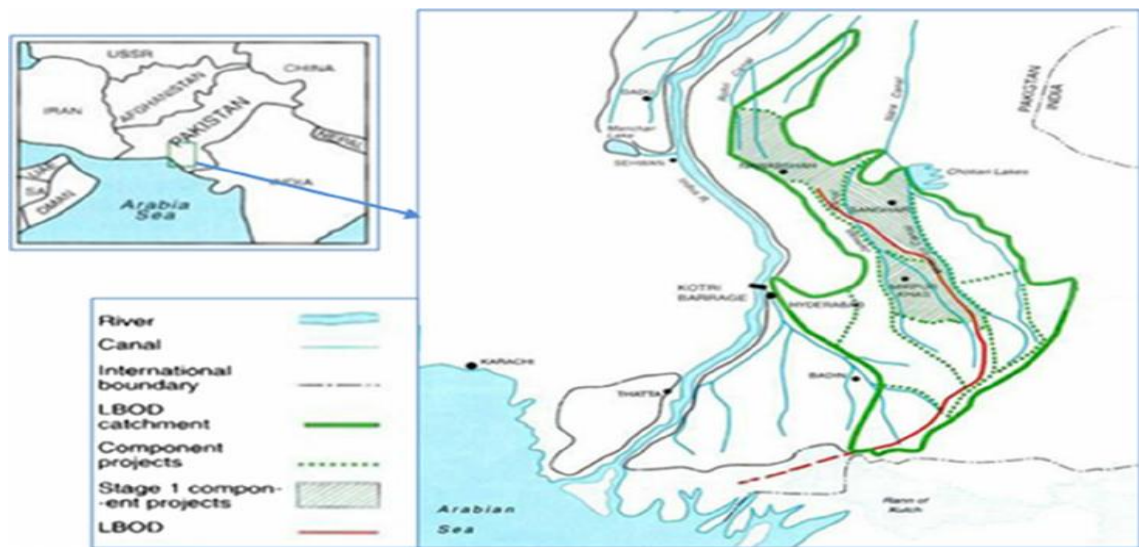
With a more than threefold increase in the population of both countries in the last sixty years, reduced availability of water in the rivers and continuously declining groundwater levels due to extraction in excess of recharge rates, the pressure on surface-water resources has increased exponentially with the potential for significant transboundary disputes³¹. Irresponsible agriculture practices with introduction of new crop varieties have resulted in higher demand for irrigation water. Provinces of Sindh and Punjab in Pakistan cater for 80% of the agriculture while they lie in arid and semi-arid zones which are highly dependent on the Indus basin irrigation network while a meager 20% of PoK irrigable land, which has abundant natural water, is under cultivation. Similarly, there is increased demand on cheap hydroelectric power in both the countries to meet the needs of rapid urbanization. Here again both the countries look up to the waters of the Indus basin. It is no wonder therefore, that Pakistan is looking to grab more water than what is entitled to it as per the provisions of the IWT.

The Treaty has too many engineering provisions, which give Pakistan undue advantage to vet the designs of the Indian projects on Western rivers. These provisions are excessively and unjustifiably exploited by Pakistan.

Rights of Gujarat were totally missed out while negotiating IWT. The construction of Left Bank Outfall Drain (LBOD) by Pakistan without getting design concurrence for it is in violation of the Article VI and Article IX of the IWT. LBOD was aimed to drain out saline water and storm runoff, from 127 million acres of land in three districts of Sindh Province to alleviate water logging and salinity from the upstream and dispose it into the Arabian Sea,

via the Tidal Link Canal. However, due technical problems, the drainage effluents instead of going into the sea started destroying lands and internationally recognized wetlands. This drain passes through the Great Rann of Kutch, over areas adjacent to India's Kutch, and causes floods besides contaminating water bodies on Indian side. This anomaly needs to be addressed.

Figure 14 : Left Bank Outfall Drain Disaster

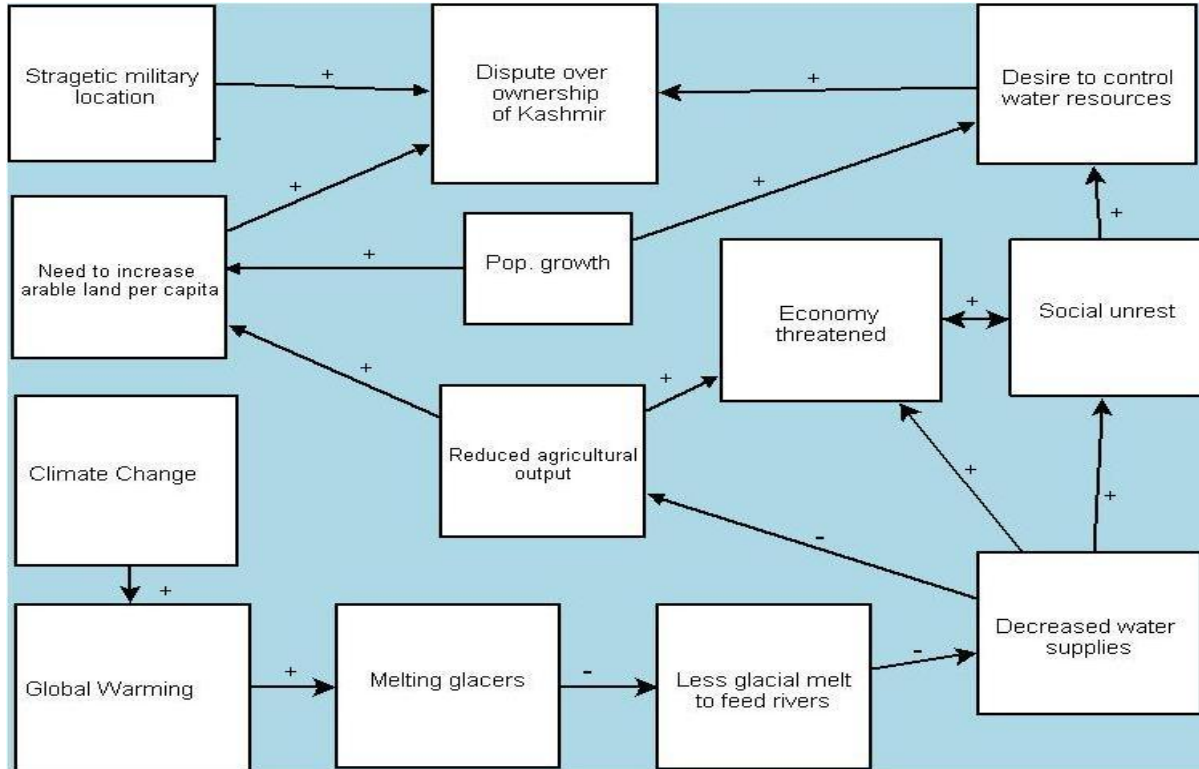


While India is seen as a growing regional power and a potential ‘super-power’, Pakistan at best is referred to as a ‘quasi-failed state’ on a decline. This has vastly altered the equation of Indo-Pak relations and affects the negotiability in any future treaties. Pakistan’s heavy dependence on supply of waters from the western rivers, its increasing water scarcity and apprehensions as a lower riparian underlie the animated water dialogues in the country. The water dispute with India has also featured in religious fundamentalism in Pakistan with terrorist organizations like Jamaat-ud-Dawa (JuD) and its leader Hafiz Saeed have attempted to use it to invoke anti-India sentiments in public. In 2010, he led street protests in all major

cities of Pakistan with placards flashing “water must flow or else blood will flow”³². These organisations have advocated the Indo-Pakistan water issue, influencing people to prepare for jihad against India over water³³. With such high levels of negativity, any meaningful cooperative interpretation of the IWT is not feasible. To meet Punjab's water needs, Pakistan has been using Kashmiri youth to secure its water interests. Syed Salahuddin, chairman of the Pok-based United Jihad Council has often said the Kashmiri youths are actually fighting for Pakistan to gain control over Kashmir's rivers. PoK President Mohammad Anwar Khan told Urdu newspapers in October 2002, “Kashmiris are fighting for the security, strength and prosperity of Pakistan ...Even peace between Punjab and Sindh depends on water, and, therefore, on Kashmir”. PoK Prime Minister Sikandar Hayat told a seminar on March 6, 2003 “The freedom fighters of Kashmir are in reality fighting for Pakistan's water security and have prevented India from constructing a dam on the Wular Barrage³⁴”.

What is generally not realized is that Pakistan’s prime motivation for seizing Kashmir is not ideological but geo-strategic. Ideology is the fig leaf that is being used to cover a naked geopolitical ambition – the desire to seize the sources of the river systems. Pakistan's mindfulness of its dependence on water flows from India for economic viability has only grown since the treaty was formalised which is utilised by its right wingers to justify its attempts to acquire Kashmir. Many analysts believe that the underlying intent of annexing J&K is to lay hands on the vast natural resources of J&K, the primary amongst them being water. The annexation of Kashmir provides Pakistan control over three of the six rivers of the Indus Valley system. Thus, the Kashmir issue and its river waters issue are deeply linked.

Figure 15 : Flow Chart of Complexities in Indus Basin



After 73 years, with the background of three wars, Indo-Pak relations have continued to deteriorate and Pakistan use of proxy war using non-state actors for acts of terrorism in India and across the world continues. The need of the hour is how to reign in this extremist approach of Pakistan. The answer could lie in controlling the resources essential for its existence i.e. water of the northern rivers. Till date India has stood by the tenets of IWT, however, relentless proxy war by Pakistan in J & K, unending border violation and continuous nuclear sabre rattling is reason good enough to use water as deterrence and a bargaining tool for aggressive politico-military solution against Pakistan. There is a need to analyse how this can be done and identify actions/ capabilities to be built to make water an important instrument of strategic deterrence for leveraging conflict resolution with Pakistan.

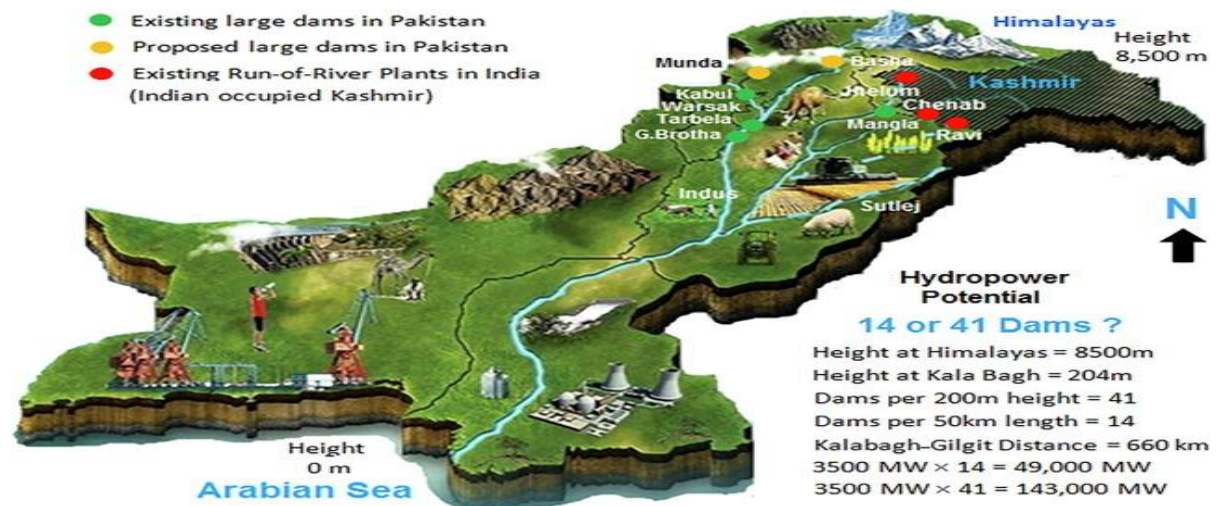
**CHAPTER IV- LEVERAGING NORTHERN RIVERS AS A TOOL FOR CONFLICT
RESOLUTION WITH PAKISTAN**

“Many of the wars in this century are about oil, but wars in the next century will be over water”.

World Bank Press Release (1995)

National interests are supreme. USA has repealed the ABM Treaty that was signed in the 1970’s as it felt that that the treaty no longer fit in to the security compulsion and realities of the 21st century. Pakistan’s own record of adherence has been dismal – witness the volte face and open floutation of the Shimla Agreement. India has industrialized in a significant manner since 1960’s and its future growth cannot be held hostage to the continued proxy war by Pakistan. There is a need to raise costs for Pakistan across the board for its unmitigated hostile behaviour. As identified, waters of Indus basin, Pakistan’s jugular vein, could provide a viable solution the vexed issue.

Figure 16 : Pakistan’s Jugular Vein – The Indus



Options For Use of Water As a Strategic Tool

Using water as a weapon may be considered a blemished act, which no civilised country should endorse but then neither is proxy war and unmindful killing of civilian population resorted to by Pakistan. Water has been used as a strategic weapon by a host of nations. River waters and their hydrological infrastructure are strategic and highly effective weapons/ targets which can be used against an enemy. These have both a defensive and an offensive dimension. Various ways to use water militarily are discussed in succeeding paragraphs.

Flooding Option.

(a) Military Aspect. Use of northern rivers for flooding by India would have a devastating impact in the Pak state of Punjab. Floods will not only result in destruction of military forces deployed in the affected area, they would deny their further use of forces of the adversary through the flooded territory. It will threaten the road and rail communication thereby restricting/ denying manoeuvre and channelizing the enemy forces into the chosen killing ground. The flooding will also result in large scale destruction of military as also terrorist infrastructure in the area affected.

(b) Civic Aspect. Additionally, the released waters would cause havoc resulting in washing away of villages and civic infrastructure. It would also have secondary impacts such as the outbreak of disease, pollution of potable water which subsequently would lead to epidemics depending upon the quantum of water released. This would have a considerable economic impact by causing destruction of the low lying areas, standing crops, industry and civil infrastructure.

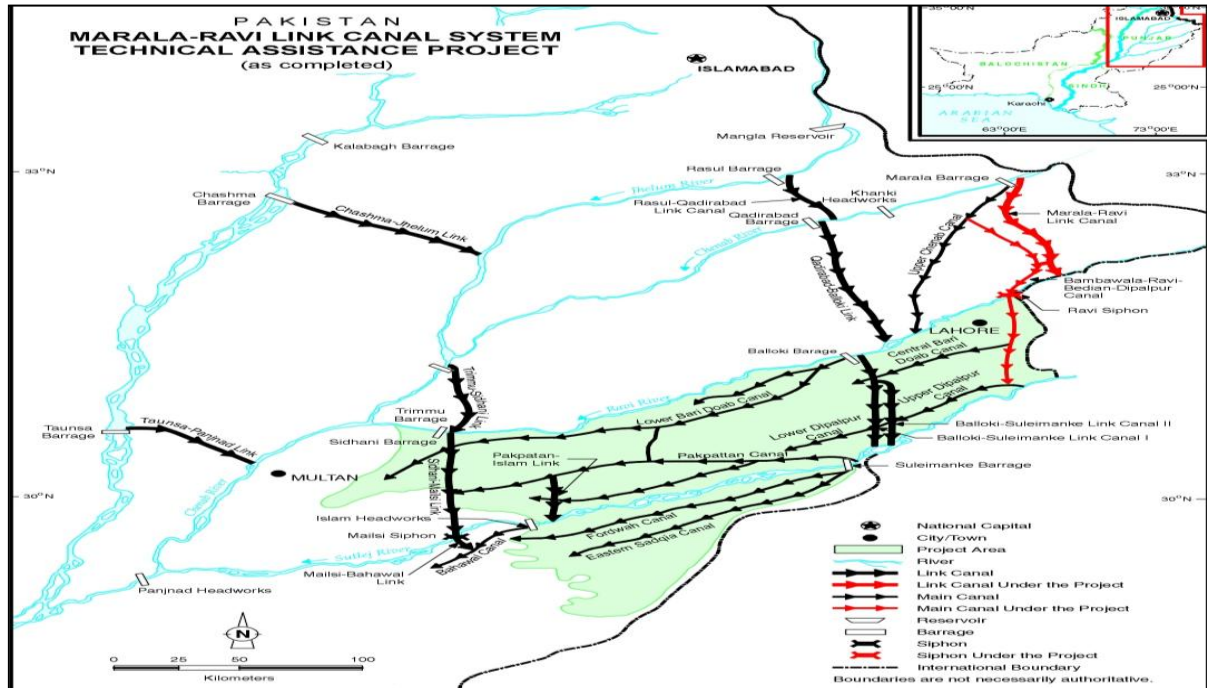
An effective option and relatively speedier to execute, however, it has to be planned meticulously. Execution of this option requires adequate infrastructure to be put in place by India in the form of water control/ regulating structures to include dams and adequate water storage reservoirs to store sufficient water to be released to have the requisite effect.

Such infrastructure takes considerable time to construct and is currently not adequately in place in India on its northern rivers upto the desired level. These once constructed would, besides their likely military use, be of immense utility for the local population facilitating irrigation of larger areas and generation of much deficient hydroelectric power in north India and in J & K in particular.

Starving (Drought) Option.

(a) Military Aspect. Pakistan has created an dense networks of canals based on the waters of Indus basin, ostensibly for the purpose of irrigation of its agricultural lands. Almost all of these are dual purpose canals with military use as well. These canals segment the Pak territory forming corridors and compartments which greatly hamper manoeuver of India's mechanized forces. The water in these canals make considerable bridging effort necessary for move of own forces.

Figure 17 : Pakistan's Canal Infrastructure Along Borders With India



Chenab river in Pakistan enters in the general area of Tagwal – Pindi and thereafter it flows into the Marala Headworks. From Marala Headworks two important canals emanate Marala Ravi link Canal (MRLC) and Upper Chenab Canal. Pakistan has used Chenab's water to strengthen its obstacle system and has developed the MRLC and the Bamban Wala Ravi Bedian Link (BRBL) to form a formidable obstacle all along the western front with India as first line of defence. Additional, Pakistan has worked out inundation schemes using the waters from these canals to obstruct move of own forces. The starving of waters of the northern rivers would render the entire Pakistan obstacle system based on waters of Indus basin through network of canals redundant and make their rout easier.

(b) Civic Aspect. Withholding of waters of the northern rivers would severely affect the availability of water in Pakistan and jeopardise the entire ecosystem built around it. This option can be used to deprive Pakistan of crucial

water during the essential cropping season thereby credibly destroying their breadbasket, Punjab. As per Pak media, existing Indian dams have reduced the normal water flow into Pakistan's major rivers. For instance, due to Indian construction of hydel projects, the water flow to Chenab river in J&K has sharply declined to around 6,000 cusecs from a ten-year average of about 10,000 cusecs. Storage of water in Baglihar Dam, reduced the flow of water in Chenab river during the sowing period of August to October 2008 and badly affected the agriculture sector of Pakistan. Pakistan lost 23,000 cusecs of water; farmers could not irrigate their fields due to shortage of water and resultantly 3.5 million agriculture tracts got barren. The standing cotton, paddy crops of basmati rice of Kharif season in Punjab which were ripe got badly affected because of absence of water³⁵.

This option if executed would have to weigh the period of time it can be exercised as the flowing water would have to be held back in own territory. This would require construction of dams to stop the water flow and ample storage capacity to be built on own side to hold the stopped water. Alternatively, a system of canals would have to be put in place to divert the water held back on own side to be put to good use without disturbing own eco system or water dynamics. This would require capacities to be built up in our river systems by interlinking them. This is currently being resisted by States. Owing to the restrictions of IWT, construction of large dams and storage reservoirs in J&K have been strongly contested by Pakistan thereby giving India limited capability to exercise this option. New projects planned and proposed over the western rivers are objected to by Pakistan, often blindly, even if within the ambit of IWT. Construction of infrastructure of this nature has to be done during the 'no war no peace scenario'.

Sharing of Hydrological Data.

Data from hydrological networks are used by public and private sectors for a variety of different applications. Water resources cannot be managed, unless we know in what quantity and quality, and how variable they are likely to be in the foreseeable future. Given the dynamics of climate change, it is quite certain that the configuration of water flow, as experienced in the past, will be followed in the future. Lower riparian state like Pakistan relies heavily on hydrological data provided during flood season between July 1 to October 10 every year by India through the 1989 Agreement. This data is crucial as large urban settlements in Lahore (on the banks of Ravi) and Multan (at the confluence of Chenab and Ravi) are vulnerable to flooding. This arrangement is beyond the IWT provisions as a gesture of goodwill from India which was renewed every year since 1989 with modifications, as and when required. The present government has decided to up the ante against the terrorist state of Pakistan as it has now decided not to renew its 1989 Agreement of sharing hydrological data of the Indus system of rivers during flood season with Pakistan with effect from the current year. The Indian government has informed Pakistan that it would only provide information on “extraordinary discharges and flood flows” hereinafter³⁶.

Development of Infrastructure.

As per the provisions of IWT, India and Pakistan are under obligation to supply information of its storage and hydroelectric projects, as specified. They are also required to notify the other country of any major engineering project is planned on the rivers under IWT. It has been the Indian experience that almost any construction planned on its northern rivers are opposed to by the Pakistanis thereafter leading to extensive deliberations, arbitrations resulting into revision of project designs, scaling down of the project, loss of time, rising of

costs and finally making the project irrelevant. India needs to share only minimal project information of these projects and go ahead with the project in a time bound manner to meet its requirements. Objections as raised by Pakistan can be handled in a formal manner, without stopping the construction, on the parallel. On its part, Pakistan did not share nor seek design concurrence for the construction of LBOD in Sindh province. As per IWT provisions, tour of construction sites is to be held once every five years. The last tour of the Pakistani team was held in 2018 and the next one will be due in 2023. India should use these five year periods to accelerate its construction works to pose a fait accompli to Pakistan in the interest of its own requirements.

Water is an emotive issue in Pakistan, whose rapidly rising population depends on Indus water systems for everything from drinking water to agriculture to defence preparedness. Given the scarcity of water in Pakistan and its overarching dependence for its very socio-economic existence as also its politico military aims, its sensitivity to waters of the Indus basin cannot be overemphasized. Pakistan has always been perceptive of this vulnerability of its water situation and the Indian strategic hold over its water resources. It harbings the fear that India may control the Indus water system to cause floods or droughts in times of conflict or to use it as part of coercive diplomacy to negotiate from a position of strength for conflict resolution.

Pakistan has consciously adopted a hostile policy on Kashmir, more importantly its waters that is designed to make India bleed at little or minimal cost to itself. To bring Pakistan to heel, India needs to fashion water as an instrument of leverage. Such leverage can serve as the most potent instrument in India's arsenal against Pakistan - more powerful than the nuclear weapons option, which essentially is for deterrence. Building leverage in the

Indus basin is a cheaper and effective option for India to reform Pakistan's behaviour than fighting a war. Indeed, peaceful options from mounting escalating riparian pressures to waging economic, cyber and diplomatic warfare can effectively tame Pakistan but only temporarily at best.

CHAPTER V- THE PLAUSIBLE APPROACH AND CAPACITY BUILDING

“Even if we do not begin this water diversion project, the next generation will. Sooner or later it will be done” -

General Zhao Nanqi, PLA (2000)

Repeated attempts to seek accommodation and peaceful resolution of Kashmir dispute have continually been rebuffed by Pakistan and now it is imperative that stringent actions are taken to safeguard our national interests. As an emerging responsible world power, actions by India are closely watched as it stands up as a fore runner of peace and development in the region. Towards attaining its rightful place in the world order, waters of India's northern rivers provide a valuable tool to counter Pakistan's anti India activities, however, the existing provisions of the IWT and India's current capabilities to effectively optimise the waters needs to be examined more closely.

If Pakistan insists on considering every developmental project on the Kashmir rivers as a geo-strategic threat rather than development works then the Treaty will not survive for much longer. Pakistan cannot abuse the IWT simply to use its veto power and hamper development. Additionally, the relevance of the Treaty in the changed socio economic scenario with vastly changed dynamics of exploding population and its needs, require a relook of the provisions of IWT. There is thus, an urgent need to review the Indus Water Treaty and redress the unfavourable clauses and establish a clear quid pro quo not only for economic reasons but also for its geo-strategic implications.

The above argument may be high on perceived morality but falls low on real politic. As a nation we are adapt in the art of sanctimonious self-deception. A revision of the IWT will be seen as a non military response to Pakistan's unabated war of terrorism. In opting for

a graduated non-military response, India will only highlight her reasonableness, her willingness to exhaust all non-military options before escalating to limited war, all out conventional war or whatever else Pakistan chooses to provoke.

Research on the issue of potential of India's northern rivers for leveraging conflict resolution commenced with the likely view that there is a feasibility of the same, with some initiatives on part of India. The research also attempted to explore whether IWT in its present form provides options to India towards conflict resolution with Pakistan. As it emerges from the extensive literature review and study of primary and secondary data, India has options to leverage its northern rivers towards safeguarding its national interests and conflict resolution with Pakistan. This would require a pro-active approach by India in the form of non military options. For this the issues as given in succeeding paragraphs would need to be addressed.

Capacity Building

Means of using water as a strategic tool, as discussed in the previous chapter, would yield desired response from Pakistan. However, in order to achieve the slated aims, India would need to invest on capacity building for the same. We would require putting in place a time bound and focused roadmap towards development of infrastructure in terms of dams, reservoirs and navigational channels, to harness the full potential of the northern rivers in the state of J&K. This would offer multiple benefits to India as follows:-

- (a) Provide adequate water for irrigation in the UT of J&K thereby facilitating greater area to be brought under irrigation.
- (b) Enable generation of deficient electricity through hydroelectric power plants constructed on the rivers.

- (c) Adequate electricity would encourage establishment of industries in the region and would generate employment besides spurring growth in J&K.
- (d) Facilitate development of waterways for transportation for goods and population.
- (e) Covert spin off of the development of said infrastructure would enable leveraging of the combat potential of the waters and building of the capability to use water a strategic tool for military application as discussed earlier

In address to the Legislative Council during January 2018, Deputy Chief Minister Nirmal Singh stated that a total of 3,263.46 MW has been harnessed on the three western rivers i.e. Jehlum, Chenab and Indus. Additional four projects are currently under execution with more in advance planning stage. It is significant to note that completion of these projects will not violate the provisions of the IWT for storage as far as western rivers are concerned. Yet, exploiting the provisions of Article VIII and Article IX with respect to the dispute redressal mechanism, Pakistan shall continue to put impediments to their execution. This development is well feasible within the purview of the usage of western rivers allotted to India under IWT.

Contribution of Eastern Rivers.

As per IWT, India has exclusive rights over the eastern rivers. However, India is not able to fully utilize these waters and a substantial quantum flows into Pakistan alleviating their water criticality. Excluding the flood water released into the downstream Ravi river from the Madhopur headworks, approximately 4.549 MAF water in an average year is available between Madhopur headworks and final crossing point (Ravi Syphon) which is not yet put to use by India and is additionally available to Pakistan³⁷. Also water flows into

Pakistan from Hussainiwala headworks which is the terminal barrage across the Sutlej river in India. Nearly 7.5 MAF of India's unutilised water share flows to downstream Pakistan territory from Ravi and Sutlej rivers. India has decided to fast track three projects on these rivers to utilize its full share from the eastern rivers, viz Shahpurkandi dam project on Ravi river, Ravi-Beas Link in Punjab and the Ujh Dam project on Ujh river in J&K. These waters will be used by Punjab, Haryana, Uttar Pradesh, and Rajasthan and Delhi along with northern hill states³⁸. Early completion of these dams will add to the water woes of Pakistan.

Maintenance of Existing Infrastructure.

In order to have full control of waters over these rivers, regular maintenance and repairs of dams and associated structures is essential. Dedicated timely earmarking of resources and funds are a prerequisite for the same. Siltation of reservoirs is a serious problem among Himalayan rivers. All the major rivers in J&K and their tributaries have massively silted flows and Chenab, the major power house of the State, has sediment load as a major crisis. The Chenab river, especially, carries more silt than the others even among the western rivers with an estimated annual silt load of 26,000 acre feet³⁹. By trapping sediment in reservoirs, dams interrupt the continuity of sediment transport through rivers, resulting in loss of reservoir storage and reduced usable life. Also as the spillway and the power intake continuously pass sand due to enhanced siltation, this causes abrasion damage to the spillway concrete structure and the turbine equipment. The silt accumulation essentially converts the reservoir into an elevated river bed with reduced capacities to generate electricity. The situation gets worse during reduced water flows during winters. One of the solutions to the problem of siltation is sluicing which involves discharging high flows through the dam during periods of high inflows to the reservoir, with the objective of permitting sediment to

be transported through the reservoir rapidly while minimizing sedimentation. Pakistan has been opposing use of sluicing tooth and nail throughout. The technology was not available at the time of signing of the IWT in 1960 but evolved soon after. When J&K's Power Development Corporation was implementing the 450-MW Baglihar project, Pakistan strongly objected to the use of low-level sluice spillway. Finally, the issue was sent to a NE appointed by World Bank who permitted the use of the technology in the project, albeit with some changes of levels. But the Court of Arbitration (CoA) has not accepted Baglihar as precedence. Any dam or reservoir that lacks effective de-silting system would have less life span and huge recurring costs. Manual desilting of rivers and reservoirs is cost prohibitive and slow besides other limitations. Consequently our hydroelectric projects on the western river are running at sub optimally with reduced storage capacities. Besides depriving us of the true hydroelectric potential of these rivers, this also reduces the availability of water for exercising the combat potential of these rivers while at the same time it enhances the obstacle potential of Pakistan's defence oriented canals and obstacle system.

Solution to J&K Issue.

The average Kashmiri is deeply resentful about the fact that no storage dams can be built over the rivers which pass through J&K. Only 1.5 Lakh acres out of 6 Lakh acres of cultivated land, is under irrigation. This is clearly a case where Pakistan kept its own interests at heart rather than Kashmir's interests. The J&K government also claims that clauses in the Treaty cost it some Rs.6,000 crores each year. The Treaty limits J&K's right to use the waters of the Jhelum and the Chenab, in particular the ability to build storage reservoirs on the two river systems. This, the State argues that it has had to sacrifice an estimated potential power generation of 17,000 MW. According to Uttam Sinha, a prominent

Indian scholar and domain expert, the cumulative effect of this is the alienation of people J&K. A State with abundance of water which could have easily become a leader in agriculture produce and exporter of electricity is acutely short of it leading to large scale unemployment, power deficit and a poor economy. Indeed, dissatisfaction over the Treaty has been building up throughout the State. Progressing ahead with planned infrastructure projects on the northern rivers in the UT will largely address the grievances of the populace and help them become participants in the nation's growth. This will majorly reduce the anti India sentiments of youth and reduce their support to anti India activities by Pakistan. It is therefore in the right spirit that under current IWT provisions, India has decided to go ahead with the construction of Bursar Hydroelectric project on the river Marusudar which will benefit the downstream projects such as Pakal Dul, Dul Hasti, Rattle, Baglihar, Sawalkot and Salal hydroelectric projects⁴⁰. But then again, typical of Pakistan, objections are being raised by Pakistan on the projects.

Actions listed above are in our national interest to meet the ever increasing water and electric requirements as demanded by a progressive economy of an emerging regional power like ours. These will also vastly address the aspirations of the people of J&K and facilitate their joining in as partners of national growth. This will ensure reduced support from the local misguided population thereby enabling reduction of Pak sponsored militancy, much to the relief of the international community. The most significant aspect of this approach is that it can be accomplished within the existing provisions of the IWT. However, India's scrupulous observance of the IWT provisions and its concessions shall continue to witness accusations from Pakistan of non compliance of the Treaty's terms. Pakistan will never stop objecting to every developmental infrastructure project on the western rivers nor

internationalising every disagreement as part of its water-war strategy against India. So is there a case in point for India to abrogate the IWT in light of its national interests?

Calls for abrogation of the IWT had been made by various sections in India in the wake of the Mumbai attacks in November 2008 and during Operation PARAKRAM. A. G. Noorani, a prominent lawyer stated that India had weighed the option of stopping waters to Pakistan by abrogating the IWT⁴¹ besides other retaliatory measures. Post attack on Indian army camp at Uri on 18 September 2016, Prime Minister's Modi's during the review meeting of the IWT in third week September 2016 stated that that '*rakt aur paani ek saath nahin beh sakta*' (blood and water cannot flow together)." Apart from deciding to exploit the maximum capacity of three of the rivers that are under Pakistan's control viz Indus, Chenab and Jhelum, in the areas of hydro power, irrigation and storage, the meeting also agreed to review the "unilateral suspension" of Tulbul navigation project in 1987. The latest call to squeeze Pakistan's waters came after the Pulwama strike on 14 February 2019 by Pak sponsored terrorists wherein Union minister Nitin Gadkari said the government is working on projects to divert water from the three eastern rivers flowing into Pakistan in order to improve availability of water in the Yamuna. Various think tanks in the country also strongly argue that revocation of the Treaty is imperative when Pakistan does anything possible to cause harm to India using militant groups as an extension of its foreign policy towards India⁴².

While the sentiments attached with these thoughts are well received, on the flip side, repealing of the IWT might not be defended under any international water laws or humanitarian laws. And after repealing the Treaty, India will have to follow it up with an engineering effort that would greatly strain the Indian economy. In any case, legally it is not possible to repeal the Treaty as it has a no unilateral exit clause. India is also aware of the

global reaction that such a unilateral action would invite. Under such circumstances, there is a need to strategise achieving the ends with global acceptability.

The Narrative

It needs to be understood that Pakistan has over a period of decades build a very strong narrative on the exploiting of its waters by India. To begin with at the time of drafting of the IWT, it had laid claim to the waters citing traditional usage patterns of the rivers. They maintained on the basis of past records that the mean flow in Indus river system totaled 175 MAF on the eve of Partition of Punjab in 1947. This comprised of 93 MAF (including 27 of Kabul) for Indus, 23 for Jhelum, 26 for Chenab, six for Ravi, 13 for Beas and 14 for Sutlej annually. Out of this 175 MAF, 167 flowed into Pakistan at the time the boundaries were fixed according to the Radcliffe Award. This means that the Indian East Punjab drew only 8 MAF of a total of 33 MAF of water that annually flowed in the three eastern rivers Ravi, Beas and Sutlej. Under the internationally agreed rights of lower riparian states and also Indian Independence Act 1947, the balance 25 MAF waters of three eastern rivers were to be shared between India and Pakistan.

They also showcased to the world community that due to the loss of certain major headworks and the need to regulate water of the western rivers, number of costly replacement and storage works had to been constructed in Pakistan post partition and were a major financial drain. The fact was, however, entirely different as it was India, World Bank and certain other nations which footed the entire bill and Pakistan got the benefit of the fresh infrastructure being created by external funding and exposure to some of the world's best engineers and technology. It also got the opportunity to establish a world class organization

in public sector, Water and Power Development Authority (WAPDA) on the lines of United States Bureau of Reclamation (USBR)⁴³.

The official line towed by Pakistan is that, since the signing of the Treaty, India has violated it a number of times. Though the permanent mechanism, Indus Water Commission (IWC), has been able to articulate the arguments in an amicable environment, there is distinct feeling in Pak that India has launched a 'hydro offensive' aimed at throttling the rivers covered under the IWT. Accordingly, Pakistan has objected to each and every project planned / developed by India on the western rivers. This approach can be evaluated from the constant writings and debates that have been made by Pakistani scholars, politicians and academia, both within and outside the country, for years. It is interesting to note that while India's rhetoric to use water as a tool against Pakistan has sporadically manifested post 2008 against their misdoings, Pakistan has maintained its 'victim state' narrative for decades. This narrative has augured well for Pakistan and Indian actions, though within the provisions of IWT, are often seen by the world community with suspicion and wrong intention.

The starting point therefore, has to be a change of narrative by India with respect to waters of the Indus river basin. This changed narrative should commence with the injustice done to India at the time of signing of the Treaty highlighting the inequitable distribution of Indus basin waters for the needs of India. It should bring out increased dependant population, socio economic changes and climate change with its resultant fallout since the time the Treaty was signed in 1960. Pakistan's underlying agenda of eyeing the waters of J&K as the root cause of Pak sponsored militancy in J&K needs to be brought out in the open. It needs to be brought out how the given situation arising out of IWT in the present form and the attitude of Pakistan towards legitimate development works on the western rivers by India have

incurred huge losses to J&K leading to their suffering and alienation. India needs to stress on the mature and considerate response by India to each of the illegitimate objections by Pakistan on the developmental works on the western rivers, often leading to change in designs or stopping of the work completely at the cost of dire requirements and loss of precious resources, time and funds. India needs to cite its national interests to optimize the usage of western rivers to meet the needs of the growing economy and its geopolitical interests. Lastly, the narrative should link the unrelenting proxy war by Pakistan and India's intention to use water as a strategic tool to leverage its northern rivers for conflict resolution with Pakistan.

This revision of narrative cannot and will not happen overnight and will take some time to construct. It will have to be planned at various levels and different spheres to include diplomatic, bureaucratic, media, academia, civil and military engagements. It will have to be spoken upon in all international foras starting from United Nations, G8 Summits, BRICS, World Bank, SAARC to bilateral interactions with our neighbours. It would need to form part of our discourse at environment and climate change conference at one end to our stand on Global War on Terrorism (GWOT).

The IWT was brokered between India and Pakistan by the World Bank supported by other nations with concessions to Pakistan in consideration of its newly formed status. In view of the changed scenario, credentials and performance of the two nations in the present day, India should use its prowess to enlist favourable support from the World Bank for the renegotiation of the IWT.

Exposing Fault Lines Within.

While the Pakistan polity blames India for its water shortages and threat to its crucial water sources, the truth lies elsewhere. Punjab, which is home to most of the senior Pak military officers and politicians, remains Pakistan's pampered and favoured province taking the lion's share of its waters. Pakistan had to construct canals to draw waters from Chenab and Indus into Ravi and Sutlej for Punjab. Consequently, the water that used to flow into Sindh is now being diverted into Punjab and this is a major source of unrest/discontent in the agrarian society of Sindh. Insufficient flow in Indus in the lower reaches is unable to prevent sea intrusion in the Indus estuary. The impact of low water supply is felt much harder in Sindh and Balochistan⁴⁴. Unequal distribution, rather than supply, is one of the main reasons for the country's water woes. It is interesting to note that Pakistan occupied Kashmir (PoK), through which the bulk of Pakistan's waters flow, does not figure in the distribution list of Indus River System Authority (IRSA) which is responsible for allocation of waters to provinces in Pakistan. The reason quoted by them is that PoK is neither a signatory to the IWT nor that of the Water Appropriation Accord (WAA) of 1991.³⁵ Diversion of waters of Neelum river in PoK has changed the flow of the fresh water from the mountains to Punjab province. Coupled with this, the diversion of water from the Neelum and Jhelum rivers to power the Neelum-Jhelum hydropower plant has further led to shortage of water in the area. The Pakistani government has been insensitive to the developmental aspirations of the people in PoK. The people of Balochistan and Sindh are also facing similar hardships.

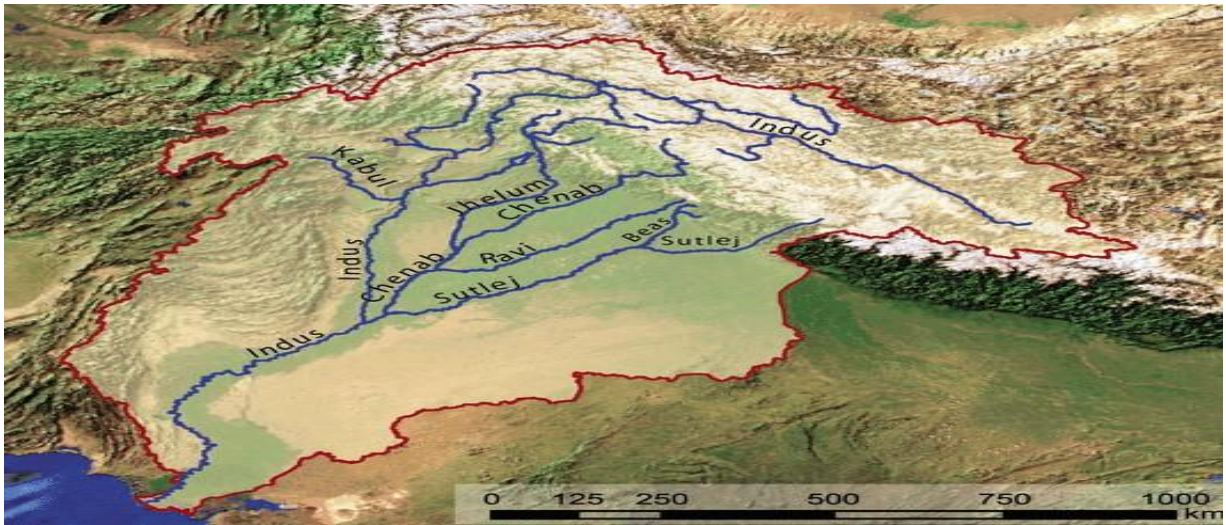
The uncontrolled tapping of ground water through borewells, untaxed water consumption of water leading to large wastages and massive corruption by the IRSA are other issues aggravating the water crisis in Pakistan. There is a need to fan sentiments of

people of Pakistan, less the favoured Punjab province, facing acute water hardship to exploit these fault lines within the Pakistan's water scenario to further accentuate the criticality of waters being made available to Pakistan by India through its northern rivers.

Afghanistan Dynamics.

India is the biggest regional donor to Afghanistan and fifth largest donor globally with over \$3 billion in humanitarian and economic assistance. Both nations have also developed strategic and military cooperation against Islamic militants. Afghanistan strengthened its ties with India in wake of persisting tensions and problems with Pakistan, which was suspected of continuing to shelter and support the Taliban.

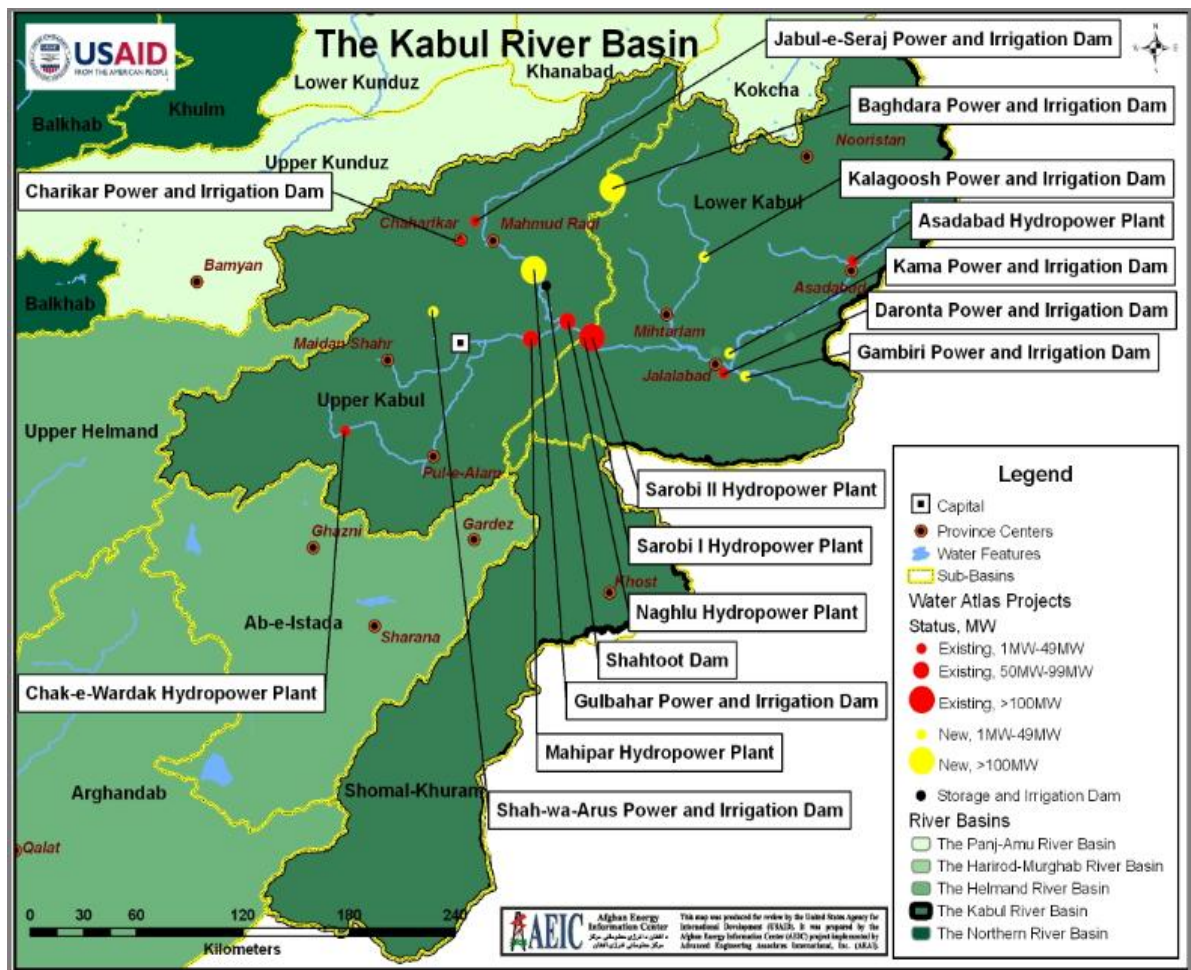
Figure 18 : Kabul River Draining Into Indus



Salma Dam, officially the Afghan-India Friendship Dam, a hydroelectric and irrigation dam project located on the Hari river in Chishti Sharif District of Herat Province in western Afghanistan was inaugurated on 04 June 2016 by Indian Prime Minister Narendra Modi along with Afghan President Ashraf Ghani. Subsequently, Afghanistan's authorities with the help of Indian experts have completed the feasibility studies and detailed engineering of 12 hydro-power projects with capacity to generate 1,177MW of electricity to

be built on the Kabul river. If the 12 projects get completed, they will store 4.7 million acre feet of water, squeezing the flow in Kabul river reaching Pakistan⁴⁵. India plans to assist Afghanistan in this initiative, which will adversely impact on Pakistan. World Bank is also on board and slated to provide funding for the 12 dams that will cost \$7.079 billion. On their part, Pakistan's authorities have failed to develop water uses on the Kabul river as they failed to build the Kalabagh Dam at the site on the Indus where the river Kabul merges with the Indus river. Similarly, they have also failed to construct the Munda Dam on the Kabul river. The failure in developing water uses has weakened Pakistan's case against the resolve of Afghanistan to build the 12 hydro-power projects on the Kabul river.

Figure 19 : Hydroelectric Projects on Kabul River



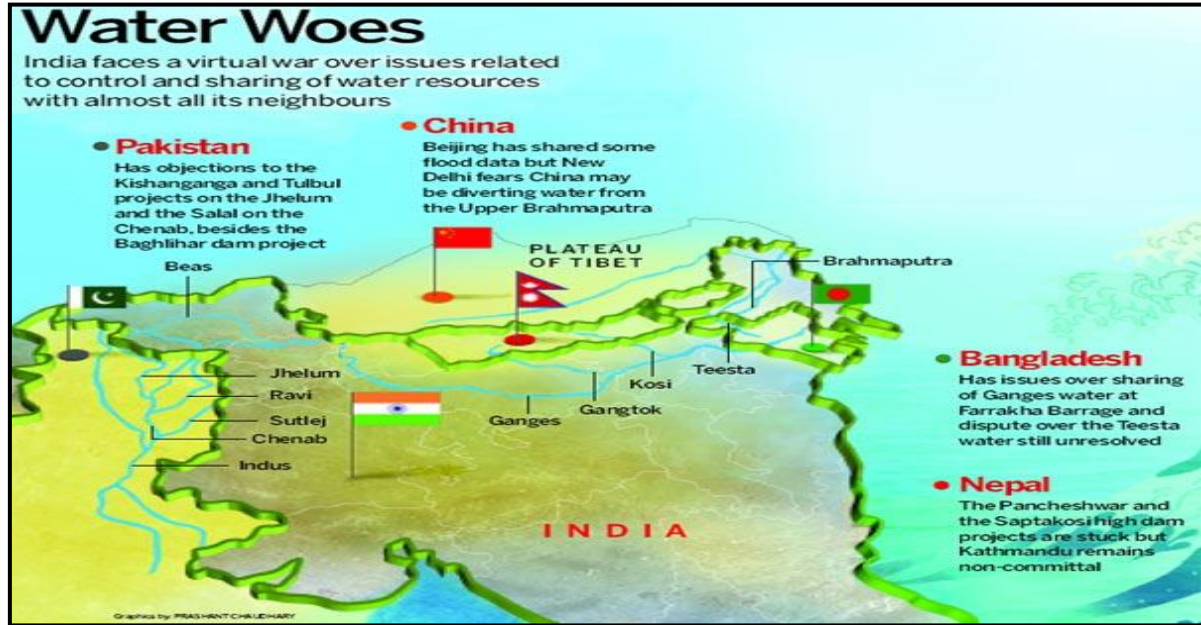
Additionally, in the absence of major dams in Pakistan, it is feared that Pakistan will have to buy electricity from Afghanistan, which is the underlying purpose of the above mentioned plan of the Afghan government in collaboration with India.

On the part of India, the projects will further create a criticality for Pakistan, thereby accentuating the water availability and adding to the significance of India's northern rivers for Pakistan⁴⁶. In any case, India needs to continue its engagement with Afghanistan, notwithstanding protestations by Pakistan and vigourously pursue its diplomacy and aid to Afghanistan towards completion of the projects leading to water encirclement of Pakistan.

Equation With Other Neighbours.

A very important aspect that colours the water debate in the sub continent is the political relationship between the countries in the region. The relationship of India with its neighbours Pakistan, Bangladesh, Nepal and China is anything but smooth. Water only adds to the plethora of issues that these countries already face like border issues, issue of migrants, cross border infiltration and drug trafficking etc. The sharing of river waters has a direct impact on the economies of the region. With the rapid changes in the climate and increasing global population, particularly in South Asia, secure access to water will be central to national security agendas and could be a source of future conflicts over water rights. India currently has workable water arrangements with its neighbours in the form of water sharing treaties with Nepal (Sarada, Kosi, Gandak, Mahakali), Bhutan and Bangladesh (Ganges; 1977 & 1996) in which India is a lower riparian/ co-riparian/ upper riparian⁴⁷. Though points of differences do exist between some of these nations with India on the issue of water, however, overall aspirations are addressed within a political climate amenable to negotiations. The same is not the case with Pakistan.

Figure 20 : Water – India and Its Neighbours



Unilateral and abrupt abrogation of the IWT can result in a cascading effect on the water sharing equations of India with its balance neighbours. It is therefore important to have adequate confidence building measures with these nations to purge their fears before taking stringent actions against IWT and Pakistan. This would require changing the narrative as discussed earlier and if required; extending some concession with respect to sharing of waters with them.

CHAPTER VI- OPTIONS FOR INDIA

"If the wars of this century were fought over oil, the wars of the next century will be fought over water"

World Bank Vice President Ismail Serageldin (1995)

The IWT has worked so far because the 'performance' has to be by India only. Being an upper riparian it has to carry out all consultations for new projects, release of waters and publication of annual accounts, indicate details on storages and so on. There is factually nothing that Pakistan has to do except, possibly, lodge objections and launch protests. It is to the credit of India, that inspite of grave provocations by Pakistan, incessant raising of non issues and trying to trump up opinion against India, we have continued with our obligations to the Treaty. The continuation of the treaty speaks of our 'credibility' and the world considers us to be responsible power⁴⁸.

But the moot point remains that how long can this persist in light of Pak sponsored proxy war and continued attempts to harm India's national interest. One solution to the vexed issue could lie in the use of waters of our northern rivers. India under such a approach has the following options to safeguard its interests and concentrate towards its growth as an emerging regional and global power:-

Option I : Abrogate the Treaty Unilaterally and Stops Additional Waters from Flowing into

Pakistan. This option appears simplistic but has fallouts as under:-

- (a) It will be construed as Human Rights violation case as water and sanitation are recognised as a human right by the UN General Assembly on 28 Jul 2010⁴⁹. Some commentators have also derived the rights to water further from Article 11.1 of the

International Covenant on Economic, Social and Cultural Rights making it binding under International Law.

(b) This option may amount to violation of the ‘UN Convention on the Law of the Non-Navigational Uses of International Water Courses’. This Convention was adopted by the UN General Assembly on 21 May 1997 with 103 countries voting for the motion, three countries against the motion, 27 countries abstaining and 52 countries not participating in the voting. China was one of the three countries which opposed the motion. However, this Convention has yet to enter into force and effect because it has so far been ratified only by 16 countries⁵⁰. Thus, though it may not be a legally binding Convention, but morally it needs to be respected, particularly in view of water and sanitation having been recognised as a human right by the Millennium Development Goals⁵¹.

(c) It may be noted that in the light of its opposition to the Convention of 1997, any unilateral action on the part of China to divert waters from the Indus and Sutlej rivers in West and Brahmaputra in East, without caring for the lower riparian states, would have a major bearing on the water availability to India, Pakistan and Bangladesh.

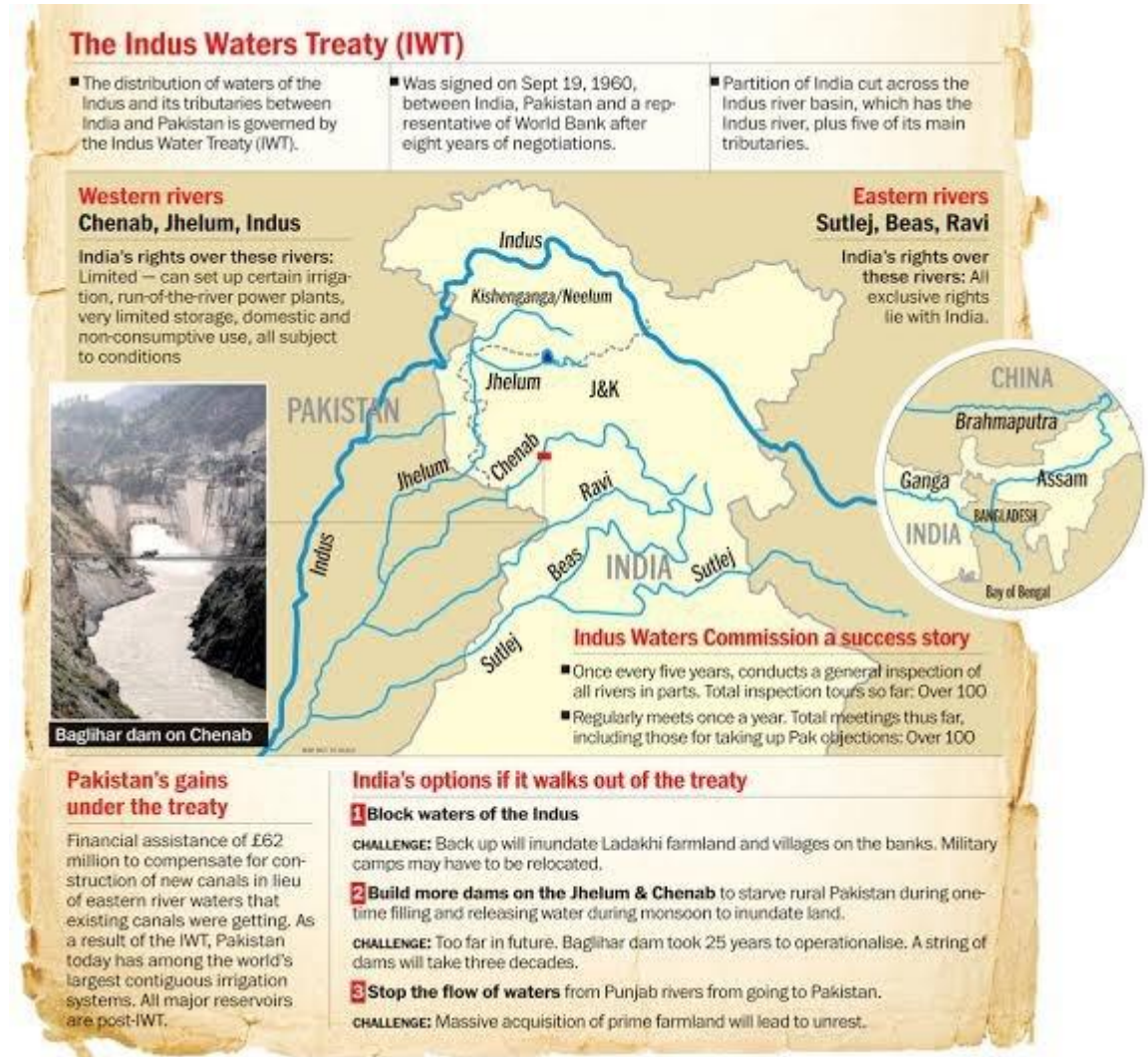
(d) Exercising such an option is also likely to cause undue anxiety amongst our other neighbours with whom India shares water sharing agreements in various forms.

(e) More importantly, India today finds it difficult to store about 3.6 MAF of the waters of the eastern rivers (Ravi, Sutlej and Beas) which leak out into Pakistan from the tributaries of Ravi river downstream of Madhopur and Firozpur (Harike) headworks. On top of it, if she plans to stop waters from the western rivers (Indus,

Jhelum and Chenab) which is approximately 168 MAF, she will find it almost an impossible task in view of the inadequate storage capacity on these rivers.

In view of the aforesaid, this option does not seem advisable because: firstly, it will show India as a irresponsible state who does not respect its international commitments; secondly, India will be going against the UN Convention of 1997 and affecting the human rights of a lower riparian state; thirdly; India will not only cease to have moral authority to challenge China on her violation of the UN Convention but will have to be prepared to similar hostile acts from China with respect to denial of water from Brahmaputra in East and Sutlej in West. Fourthly, it needs to be appreciated that creation of new infrastructure in the form of dams and storage capacities for the water flowing into Pakistan is a complex task requiring dedicated will, resources, land, funds and time. This option is therefore, not the best option to start with when considering use of our northern rivers for conflict resolution with Pakistan.

Figure 21 : Options For India



Option II : Status Quo Ante to be Maintained.

Implication of implementation of this

option would imply that:-

- (a) Waters from the western rivers, part of water which India is entitled to impound (upto a maximum of 3.6 MAF) but is presently not being impounded, is allowed to go to Pakistan. Of the 1.34 million acres permitted for irrigation, India continues to use only 0.792 million acres⁵².

(b) Hydro-electricity projects which can help India generate to the tune of 16,475 MW from the western rivers are not progressed. It may be noted that of this capacity, projects worth only 3,264 MW are ready and projects for additional capacity are in various stages of construction. If we go by the premise of this option, the projects under construction will have to stop and new projects which India could take up as part of its entitlement as provided by the IWT, will not be executed in light of Pakistan's objections.

(c) Also, waters from tributaries of Ravi river downstream of Madhopur Headworks, though forming part of India's share of 33 MAF from the eastern rivers, are allowed to continue flowing into Pakistan.

(d) Water entitled for use by India under IWT shall continue to feed Pakistan and surplus water be utilized by them to fill up its defence oriented ditches and canals.

(e) UT of J&K continues to suffer as hitherto-fore losing out on much required waters and essential electricity besides other socio economic implications.

While this is one option which Pakistan may want India to continue with, but as a *quid pro quo*, it is not doing enough to assure India that the terrorist related activities being planned and executed from its soil will not be further encouraged. In fact, post Uri and Pulwama terror attacks, militant related anti India activities from Pak soil continue unabatedly. Exercising this option portrays India as a soft nation not capable of looking after its population and national interests and is therefore not recommended.

Option -3: India Goes Ahead With Plans to Fully Utilise Its Entitled Waters Under IWT and Simultaneously Works Towards Renegotiating IWT. India is well within her rights under the provisions of the IWT to fully stop the leakages from the eastern rivers

(approximately 3 MAF) and make efforts to impound 3.6 MAF from the western rivers as entitled by the provisions of the IWT. Exercise of that right cannot invite differences with the World Bank which stood guarantee to the IWT, nor will it leave any scope for the world opinion to allege violation of the rights of lower riparian states as provided under the provisions of the 'UN Convention of 1997 on International Channels'.

It also needs to be appreciated that India needs to harness the hydro-electric potentials of the western rivers, as permitted within the provisions of the IWT, to ensure that the power requirement of the UT of J&K. It would therefore, be in fitness of things that India creates the necessary infrastructure to store the water to the extent of her entitlements and generates hydro-electricity as provided in the IWT. This would require focused approach and dedicated allotment of resources and funding. The hydro developmental projects need to continue regardless of Pakistan's objections. In fact, it may be noted that whenever Pakistan has gone into arbitration, NE or the International Court of Justice (ICJ), India's right to use waters of the western rivers for the purposes stipulated in the IWT have been up-held every time. It needs to be understood that nothing contained in the Treaty, and nothing arising out of the execution thereof shall be construed as constituting recognition or waiver whether tacit, by implication or otherwise of any rights or claims whatsoever of either of the parties. The Treaty can be terminated only by another Treaty. It is therefore, in the best interest of Pakistan that India continues to abide by IWT which has been overtly liberal to Pakistan towards allotment of waters of the Indus river basin. India needs to undertake hectic diplomatic parleys to highlight to the world community about the unfair deal meted out to it under the Treaty and in light of the evolving socio economic environment and changed climatic conditions, thereby necessitating revision of the IWT.

As is evident, Option III is the most workable and preferred option which will maintain the credibility of India in the world order and is likely to achieve the desired results eliciting favourable response from Pakistan.

Hypothesis Testing

Pursuant to the research, a questionnaire, placed at Appendix 'B', was administered to obtain primary data from 144 intellectuals with good knowledge of the issue. Bulk of the respondents comprised of officers from the defence forces (74.3%) and civil/ government services (16%). Minimum educational qualification of the respondents was Graduation with 23% of the respondents holding post Graduate and Doctorial degrees in various subjects. Responses to the questionnaire are given at Appendix 'C'. Brief analysis of the responses as in succeeding paragraphs.

Analysis of Responses

It was unanimously agreed by the respondents (94%) that water is one of the significant geo-political factors in the Indo Pak relationship, disagreements over which can be a source of conflict (Question 1).

To the aspect of full-fledged conventional military operations against Pakistan as against use of soft power including diplomatic and economic isolation and use of water as a conflict resolution tool (Question 2), the respondents (59%) felt that soft power usage including use of water is likely to be more effective tool to counter Pakistan's anti India activities. 29% of the respondents, however, felt that use of conventional military action against Pakistan would serve India's interests better.

It was strongly opined by the respondents (86%) that re-negotiating the IWT or even regulating waters of the northern rivers to their full potential (within the ambit of IWT) has the potential to severely affect Pakistan (Question 3).

A majority of respondents (84%) were of the opinion that control and use of northern rivers offensively during war is justified and will act as an effective instrument of deterrence during 'No War, No Peace' scenario (Question 4). However, a strong need has been felt (87%) to create additional joint civil and military structures by India to regulate waters of its northern rivers for immediate use during hostile situations (Question 5). These would serve the dual purpose of adequate response during hostilities and at the same time meet the socio economic requirements of the UT of J&K and the nation.

Sizeable numbers of respondents (49%) have observed that there is a need to construct adequate water control structures over its northern rivers in J & K to utilize their waters for leveraging conflict resolution with Pakistan. In the absence of accurate data on the subject, substantial respondents (39.6%) were not sure of the capability of the existing water control structures for harnessing their potential as a conflict resolution tool with Pakistan (Question 6).

The respondents are divided in their outlook, 47% each, on whether or not India should breach the IWT while constructing water regulating and control structures over its northern rivers and develop complete capability in accordance with provisions of IWT only (Question 7). This large variance seems to be due to the consideration on the part of some respondents on blind observations raised by Pakistan's development versus the outcome of unilateral abrogation of IWT as viewed by the international community. This aspect shall be dwelled on further.

The UT of J&K has suffered the most due to the incessant observations by Pakistan on the developmental works on the northern rivers. A major cross section (70%) feels that construction and developmental works on the northern rivers will benefit the people of J&K and will be supported by them (Question 8).

A large cross section (76%) was opposed to the idea that India should not use water as a strategic deterrence against Pakistan as it would violate the IWT just because IWT was a time tested Treaty in place for the last 60 years (Question 10). Their view is in line with the changed socio economic scenario and continued efforts by Pakistan to destabilise India and transcends to the view that the Treaty should be abrogated or revisited, atleast.

A stark reality which has been vehemently reinforced by the respondents (96%) is that any construction of water control/ regulating structures over northern rivers will be strongly objected to by Pakistan. It is immaterial whether the project is against the tenets of IWT or not, the project will be opposed tooth and nail in the Draft Project Report (DPR) stage itself (Question 11).

Strong objection by world community (less Pakistan) including World Bank, IMF and UN to the construction of water control/ regulating structures over northern rivers by India (Question 12) is a moot issue. While 45% of the respondents feel that any such action by India will be objected to, lesser numbers (16%) feel that it will not be so. A considerable size of respondents (39%) was not sure. The argument hinges on the logic that is presented to justify such construction and the narrative that is edified. Given the current standing of India as a dependable and mature growing leader vis-à-vis Pakistan, there is potential to tilt the decision in our favour..

Even war, including proxy war is neither kind nor humane. Just and responsible reactions need to be reciprocated in equal measure. It has been opined by the respondents (56%) that India should undertake offensive actions like starving/ flooding Pakistan employing its northern rivers as a quid-pro-quo against Pakistan sponsored anti India activities (Question 13) in its national interests.

Present provisions of IWT are heavily weighed in favour of Pakistan and are not in sync with the current socio economic dynamics of the two nations. Rather than unilaterally abrogating the IWT and getting viewed as a bully, there is a need to re-negotiate the IWT with balanced conditions and guidelines. This would require putting forth the irrelevance of IWT in the present form and provide a correct and factual scenario to the world community for its renegotiation. The respondents strongly agreed (86%) in favour of the pressing need for India to build a strong counter narrative through diplomatic initiatives to re-negotiate the IWT (Question 14).

The respondents were almost equally divided (39% each) on the unilateral abrogation of IWT by India to safeguard its national interests in light of Pakistan's anti India activities and unrelenting proxy war (Question 15). These equally divergent outlooks could be a result of section of balanced respondents seeking to take the world community on board before abrogation of IWT on one hand and the hardliners opting for unilateral abrogation regardless of world opinion on the other.

An overwhelming majority of responses (88%) received was of the opinion that India needs to highlight own criticality of water and losses to people of J & K due to unfavourable conditions of IWT for leveraging opinion of the world community for re-negotiating IWT

(Question 16). A mere 2% of respondents were against the recommendation while 10% were not sure of the implications of the issue.

A considerable percentage of respondents (67%) felt that abrogation of the IWT by India will also affect its water sharing arrangements with other neighbours thereby necessitating a suitable political climate of trust and confidence building measures to be put in place with balance neighbours before or simultaneous to the abrogation of IWT with Pakistan.

Respondents were unanimous in their view (89%) that greater control of northern rivers by India will provide an effective tool for leveraging conflict resolution with Pakistan (Question 9).

From the study so far and the summary of responses, it clearly emerges that waters from India's northern rivers are extremely important for Pakistan and have the potential for leveraging conflict resolution with Pakistan. This can be achieved as a part of a holistic strategy rather than sporadic actions in response to Pakistan's anti India activities.

Pakistan is acutely water stressed and is fast heading towards water scarcity. The major part of this criticality is Pakistan's own doing to include preferential treatment of Punjab, poor water management within rest of the country, unregulated usage, inadequate development of hydro resources and large scale corruption by the water regulating authorities, to name a few issues. The Kashmir issue is closely linked with its waters and Pakistan is looking at the waters from India's northern rivers to meet its requirements. Pitted against a formidable and superior Indian army, Pak armed forces have adopted a doctrine of proxy war employing sponsored militants against India in general and J&K in particular. This is to obstruct India's growth and to alienate J&K. Despite gracious allotment of Indus

river basin waters to Pakistan by India under the provisions of IWT, Pakistan continues to oppose all efforts by India to develop its water resources in J&K.

Pakistan, despite its protestations, is unlikely to ever abrogate IWT because of its own vulnerabilities caused by the increasing shortage of water within Pakistan and the undue benefits that it draws from the Treaty. She will continue making noise to claim victimhood. India, due to the geography of the IRB, is indeed in a position to influence the flow of water downstream. No wonder, in view of the current state of tension between the two countries, many of the strategic thinkers in India are of the view that the Treaty needs to be abrogated or at least reviewed, and they feel that the water can be used as a tool to restrain Pakistan from its inimical behavior.

CHAPTER VII : PROGNOSIS AND WAY AHEAD

"Only by working within the laws, that govern the flow of water, will happiness be achieved"

Lao-Tse

Pakistan is acutely water stressed and is fast heading towards water scarcity. The major part of this criticality is Pakistan's own doing to include preferential treatment of Punjab, poor water management within rest of the country, unregulated usage, inadequate development of hydro resources and large scale corruption by the water regulating authorities, to name a few issues. Despite gracious allotment of Indus river basin waters to Pakistan by India under the provisions of IWT, Pakistan continues to oppose all efforts by India to develop its water resources in J&K. The Kashmir issue is closely linked with its waters and Pakistan is looking at the waters from India's northern rivers to meet its requirements. Pitted against a formidable and superior Indian army, Pak armed forces have adopted a doctrine of proxy war employing sponsored militants against India in general and J&K in particular. This is aimed to obstruct India's growth and to alienate J&K for its water resource.

Pakistan, despite its protestations, is unlikely to ever abrogate IWT because of its own vulnerabilities caused by the increasing shortage of water within Pakistan and the undue benefits that it draws from the Treaty. She will continue making noise to claim victimhood. India, due to the geography of the IRB, is indeed in a position to influence the flow of water downstream. No wonder, in view of the current state of tension between the two countries, many of the strategic thinkers in India are of the view that the Treaty needs to be abrogated

or at least reviewed, and they feel that the water can be used as a tool to restrain Pakistan from its inimical behavior.

As identified in the previous chapter, India needs to go ahead with plans to fully utilise its entitled waters under IWT and simultaneously works towards renegotiating IWT to safe guard its national interests and to elicit favourable response from Pakistan. All treaties and agreements, bilateral or multilateral, are signed on the basis of the *Pacta Sunt Servanda Principale*, i.e. ‘agreements must be kept’. Although Pakistan’s own record on this account is dismal, but India which prides itself in being a responsible country should not violate it, lest it affects her credibility and moral high ground.

The Way Ahead

Charting the course of its trajectory towards development, India needs to address its security concerns and keep its national interest prime. One of the chief players in this aim is the waters of its northern rivers. While it may not be prudent to unilaterally abrogate the Treaty, but a review of the IWT definitely needs to be considered. The way forward to use our northern rivers as an important element of the national strength and as part of the strategy to deal with Pakistan is the need of the hour and can be achieved as given in succeeding paragraphs.

Completion of Ongoing Projects. India needs to proceed relentlessly towards early time bound completion of its planned water retaining structures and power projects on the western rivers as they are well within the ambit of IWT. Dedicated allotment of effort in terms of resources and funds should be earmarked for the same. Stalled projects like Tulbul Navigation Project should be restarted and undertaken at break neck speed. Objections by Pakistan should not lead to stopping of work on the projects but should be dealt separately

under the provisions of the Treaty on a parallel track. India should not be over zealous about visits by Pak teams to the work sites and should permit these only as per frequencies given under the Treaty. It would be necessary that Pakistan's effort to delay the projects based on the rights it has been granted vide Article VIII of the Treaty are addressed on high priority and disposal of the cases as required vide Article IX is completed as quickly as possible.

Future Planned Projects. A roadmap needs to be prepared and frozen for future projects on the northern rivers. These should be fast tracked within our capability of garnering adequate resources to undertake numerous projects simultaneously. Concurrent actions of designing, land acquisitions, necessary environment and technical clearances and earmarking of efforts need to be initiated simultaneously. Only bare minimum essential details, as required under the provisions of IWT should be shared with Pakistan and that too just in time. We may consider incorporating various international players in these projects like World Bank and multinational companies for part funding or design or contracting to raise the stakes in these projects thereby making the opposition by Pakistan difficult.

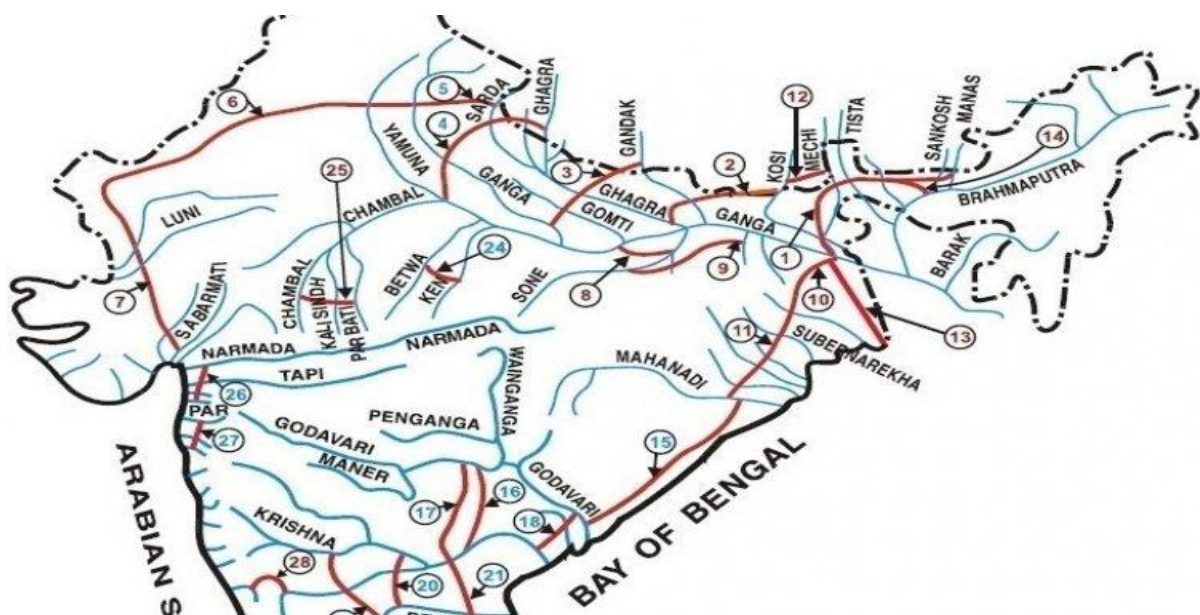
Maintenance Works On Existing Infrastructures. India needs to focus on the repair and maintenance works on the existing infrastructures on the western and eastern rivers to make them more efficient and increase their longevity. De-siltation works need to be undertaken to improve existing capacities of the pondages on these rivers. Repair of dams and infrastructure will provide control over the waters in these rivers. This will enable further reduction of water flow into Pakistan

Infrastructure on Eastern Rivers. Pakistan's dependence on the northern rivers can be further accentuated by totally stopping the flow of waters of the eastern rivers (Sutlej, Beas and Ravi), which is in accordance to the IWT. For this, the Shahpur Kandi Dam should

be completed at the earliest to stop waters of Ravi river from flowing into Pakistan. Besides augmenting supply in Ravi-Tavi Irrigation Complex, it will also provide much needed 206 MW of power. Also, this arrangement will substantially reduce the leakage from Madhopur. If harnessed fully, the eastern rivers besides providing better irrigation facilities in own area, will also help in restricting the waters allocated to India going across the border, where one of the major usages of this water is in filling of Pakistan's Ditch cum-Bund (DCB) defences.

Usage of Excess Capacities. The additional waters so available by optimizing the western and eastern rivers need to be put to good use to meet the growing demands of own population. Existing capacities of our river systems cannot accommodate this supplementary water. It is therefore prudent that we relentlessly pursue the National River Linking Project⁵³ under consideration. This project will some modifications to incorporate the rivers of IRB will facilitate transfer of excess water from these rivers to be put to good use by the nation.

Figure 22 : The National River Linking Project



Narrative Building. India needs to ginger up its diplomatic initiatives to build a strong narrative on its water needs and the way it has been short changed by the IWT. This change of narrative has to be pursued vigorously at all levels and at all forums. Quite understandably, this will take time but will send a strong signal to Pakistan about our concern towards our waters. This changed narrative will also form the basis of the revision of IWT in due course of time.

Expose Fissures Within. The general populace of Pakistan needs to be exposed to the follies and inapt handling of waters within the country. The inability of Pakistani authorities in management and development of their water resources leading to the country on the verge of water scarcity should be highlighted as a counter to false propaganda by them blaming India as a reason of their water woes. In April 2008, Pakistan's Indus Water Commissioner, Jamaat Ali Shah, in a frank interview conceded that the water projects undertaken by India do not contravene the provisions of the IWT. He said that "in compliance with IWT, India has not so far constructed any storage dam on the Indus, Chenab and Jhelum rivers (rivers allotted to Pakistan for full use)⁵⁴. Sane voices in Pakistan should be encouraged and supported to step forward to acknowledge India's meticulous record towards upholding of the tenets of IWT. This will add to the credibility of India as a responsible nation.

Water Encirclement. India should continue its assistance to Afghanistan in construction of the dams over Kabul river. This will further reduce the availability of water in Pakistan and make the water from the Indian rivers dearer thereby increasing their potential to leverage conflict resolution with Pakistan.

Assuagement to Neighbours. Aggressive use of its northern waters by India against Pakistan is likely to throw up anxious concerns by other neighbours with whom India has water sharing arrangements. These concerns need to be addressed with all seriousness through diplomatic initiatives and confidence building measures. If felt necessary, certain concessions may be considered with these countries in this regards befitting of a mature larger neighbour. These efforts should also form part of the narrative being built by us, as discussed earlier, to showcase India's responsible stature.

Tough Stand. India has been too accommodating towards Pakistan's demands with respect to IWT. Besides frequent unjustified objections by Pakistan on Indian projects on the rivers of IRB, they have been seeking frequent site visits and additional project information. We need to take a tough stand and strictly follow the provisions as laid down in the IWT. In this regards discontinuance of the standalone 1989 Agreement on sharing of hydrological data between July 1 to October 10 every year by India is an affirmative step. There is a need to take a tough stand in respect data being provided on projects which should be strictly in accordance with IWT and probably 'just a little less and just a little late'.

J&K Factor. The alienation of J&K due to the inappropriate raising of issues related to its rivers by Pakistan needs to be communicated to the world community. India's efforts to boost infrastructure on the northern rivers with the aim to usher development in the State and to eradicate militancy as its contribution to GWOT and to promote its national interests needs to be highlighted. The vocal support of the people of J&K in this regards will find acceptance in the global order.

Review of IWT. Concurrent with the above listed actions, India needs to gradually but firmly build international acceptance to the revision of the IWT. It is in the best interests of Pakistan that the IWT continues in the present form due to the unjustifiable benefits that accrue to it from it. However, given the changed socio economic scenario, relevance of IWT in the present form, aspirations of people of J&K, technological advancement and most importantly its gross misuse by Pakistan in violation of our national interests are reasons fit enough for its revision. This India needs to do from a position of strength as an emerging regional and global leader.

Formation of a task force in December 2016 comprising of Principal Secretary to the Prime Minister, National Security Advisor, Foreign Secretary and Secretaries in ministries of Finance, Environment, Power and Water Resource besides Chief Secretaries of J&K and Punjab to review the IWT is a positive move in the direction. The Task Force is mandated with taking all important strategic and policy decisions with respect to the Treaty and hopefully it will help India in creating adequate water management infrastructure in a time bound manner so that she is able to utilise all the waters that she is entitled to harness.

Water is and shall continue to remain a crucial resource and a major bone of contention between India and Pakistan. The strain on existing water resources at some point will boil over due to the fact that climate change and growing populations will put unsustainable demands on this meagre resource. The criticality will appear sooner for Pakistan which is already heading towards water scarcity in the very near future. Unlike India which has multiple river basins as sources of waters, Pakistan is wholly dependent on the waters of Indus river basin.

Pakistan's anti India activities persist unabatedly and the nation continues in denial mode. As proved conclusively in the study, India's northern rivers can be effectively leveraged to seek a resolution with Pakistan. For this India needs to be firm footed and initiate actions as discussed above to safeguard its national interests. India for the last 60 years adhered to the tenets of IWT from a position of disadvantage, but now, with the emergence of Pakistan as a major source of terrorism and anti India activities, the first casualty may have to be the Treaty itself.

“Therefore, just as water retains no constant shape, so in warfare there are no constant conditions.”

- Sun Tzu

References

-
- 1 Chaturvedi, A.K. (2018) : Indus Water Treaty : An Appraisal. *VIF Paper*. p.1.
 - 2 War by other means. (2016, Sep 26). *India Today*. Retrieved from <https://www.indiatoday.in/magazine>.
 - 3 Kanwal, Gurmeet. (2018, Oct 8). How to Counter Pakistan's Proxy War. *Economic Times*. Retrieved from <https://economictimes.indiatimes.com/news/defence/longread-how-to-counter-pakistans-proxy-war/articleshow/66119254.cms?from=mdr>.
 - 4 Mizokami, Kyle (2019, Feb 15). India vs. Pakistan: Who Wins in a War (And How Many Millions Could Die)? *The National Interest*.
 - 5 Asthana, V., & Shukla, A. C. (2014). *Water security in India: hope, despair, and the challenges of human development*. New York: Bloomsbury Publishing.
 - 6 Refer Appendix 'A': Indus Water Treaty.
 - 7 <http://mowr.gov.in/writereaddata/linkimasges/final1400516739.pdf>.
 - 8 J&K has hydro power potential of 16,475 MW: J-K govt. (2018, Jan 10). *The Economic Times*. Retrieved from https://economictimes.indiatimes.com/industry/energy/power/jk-has-hydro-power-potential-of-16475-mw-j-k-govt/articleshow/62443953.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst.
 - 9 Siddiqui, Iqtidar H. (2010). *Hydro Politics and Water Wars in South Asia*. Karachi: Vanguard Books, p.67.
 - 10 Akhtar, Shaheen. (2010). Emerging Challenges to Indus Water Treaty. Islamabad: *Institute of Regional Studies*, 28(4), Autumn, p. 6.
 - 11 Op.cit. Siddiqui. *Hydro Politics and Water Wars in South Asia*. p. 68.

-
- 12 Vergheese, B.G. (2005): Indus Water Treaty. *USI Journal*, 135(561), Jul-Sep. p. 428-437.
 - 13 Shaheen, F.A., et al. (2014). *Sustaining energy and food security in trans-boundary river system: Case of Indus basin*. Retrieved from <http://www.riversymposium.com/index.php?element>.
 - 14 Mustafa, D. (2013). *Water resource management in a vulnerable world: the Hydro-hazardscapes of climate change*. New York: I.B. Tauris.
 - 15 Chaturvedi, A.K. (2013). *Water a Source for Future Conflicts*. New Delhi. Vij Books India Pvt Ltd. p. 160.
 - 16 Darde, P.N. (2016, Sep). Detrimental Effects of Tiny Silt Particles on Large Hydro Power Stations and Some Remedies. *Perspectives in Science*, 8. p.142-145.
 - 17 Kaushal, Sabita. (2016, Oct 3). J&K Mulls Mini Dams for Irrigation. *India Water Portal*. Retrieved from <https://www.indiawaterportal.org/articles/jk-mulls-mini-dams-irrigation>
 - 18 Wasi, Nausheen. (2009, Sep). Harnessing the Indus Waters Perspectives from Pakistan. *IPCS Issue Brief*, 128. Retrieved from <https://www.files.ethz.ch/isn/106802/IB128-Ploughshares-Nausheen.pdf>.
 - 19 Bakshi, Gitanjali., and Trivedi, Sahiba. (2011). *Indus Equation*. Mumbai: Strategic Foresight Group. p. 19.
 - 20 Op.cit. Wasi. Harnessing the Indus Waters Perspectives from Pakistan. p. 25.
 - 21 Bhutta, Zafar and Haq, Shaharam. (2013, Dec 22): Victory Claims Cloud Final Arbitration Award. *The Express Tribune*, Pakistan.
 - 22 Op.cit. Wasi. Harnessing the Indus Waters Perspectives from Pakistan. p. 22.

-
- 23 Op.cit. Siddiqui. *Hydro Politics and Water Wars in South Asia*. p. 97.
- 24 Op.cit. Wasi. *Harnessing the Indus Waters Perspectives from Pakistan*. p. 22.
- 25 Joshi, Anshul. (2019, Dec 04). Indus Water Treaty: India must focus on speedy development of hydro projects, say experts. *ET Energy World*.
- 26 Ahmad, Omair. (2018, Jun 15). The Indus Waters Treaty: caught between a dispute and a hard place. *thethirdpole.net. Understanding Asia's Water Crisis*. Retrieved from <https://www.thethirdpole.net/en/2018/06/15/the-indus-waters-treaty-caught-between-a-dispute-and-a-hard-place/>
- 27 Op.cit. Akhtar. *Emerging Challenges to Indus Water Treaty* .p 59.
- 28 Op.cit. Chaturvedi. *Indus Water Treaty*. P. 19.
- 29 Shams, S. (2016). Why Water Scarcity is a Bigger Threat to Pakistan's Security Than Militancy. Retrieved from <http://www.dw.com/en/why-water-scarcity-is-a-biggerthreat-to-pakistans-security-than-militancy/a-19293470>
- 30 Op.cit. Chaturvedi. *Water a Source for Future Conflicts*. P. 179.
- 31 Sarfraz, Hamid.(2013): Revisiting the 1960 Indus Waters Treaty. *Water International*, 38(2). p. 204-216.
- 32 Verghese, B.G. (2001, Apr). Water issues in South Asia. *ORF Discourse*. 5(8).
- 33 Op.cit. Akhtar. *Emerging Challenges to Indus Water Treaty*. P. 13.
- 34 Swamy, P. (2002). A Treaty Questioned. *Frontline*, 19(10)
- 35 Jamal, Haseeb. (2017, May 06). Impact of Indian Dams in Kashmir on Pakistani Rivers. Retrieved from <https://www.aboutcivil.org/impact-of-Indian-dams-in-Kashmir-on-Pakistani-rivers.html>

-
- 36 Mohan, Vishwa. (2019, Aug 22). India stops sharing hydrological data with Pakistan. *Times of India*. Retrieved from <https://timesofindia.indiatimes.com/india/india-ends-goodwill-gesture-stops-sharing-hydrological-data-with-pakistan/articleshow/70779099>.
- 37 Central Water Commission. (1987). *The Ravi- Beas Water Tribunal Report*. New Delhi: Ministry of Water Resources. p.261, 289-290.
- 38 Razdan, Nidhi. (2019, Feb 22). Will Stop India's Share Of Water Flowing To Pak, Says Nitin Gadkari : 10 Facts. Retrieved from <https://www.ndtv.com/india-news/government-has-decided-to-stop-our-share-of-water-which-used-to-flow-to-pakistan-tweets-minister-nit-1997270>
- 39 Vishvanathan, N. (2000). Silt Disposal from Reservoirs in Varma, C.V.J., Naidu, B.S.K. and Rao, A.R.G., eds. *Silting Problems in Hydro Power Plants: Proceedings of the First International Conference*, 13-15th October 1999. New Delhi: CRC Press.
- 40 Retrieved from <http://www.nhpcindia.com/projectdetail.htm?CatId=8&ProjectId=24>
- 41 Noorani A.G. (2014, Sep 30). A Treaty to Keep. *Frontline*.
- 42 Op.cit. Akhtar. Emerging Challenges to Indus Water Treaty. p.17.
- 43 Op.cit. Siddiqui. *Hydro Politics and Water Wars in South Asia*. p. 69.
- 44 Mustafa, Daanish, et al. Contested waters: Subnational scale water conflict in Pakistan. Washington: United States Institute of Peace. Retrieved from <https://www.usip.org/sites/default/files/2017-04/pw125-contested-waters-subnational-scale-water-conflict-in-pakistan.pdf>.
- 45 Mustafa, Khalid (2016, Jun 05): India Out to Damage Pakistan's Interests on Kabul River. *International: The News*.

-
- 46 Ramachandran, Sudha. (2018, Aug 20): India's Controversial Afghanistan Dams. *The Diplomat*. Retrieved from <https://thediplomat.com/2018/08/indias-controversial-afghanistan-dams/20August2018>
- 47 Op.cit. Chaturvedi. (2013). *Water a Source for Future Conflicts*. p. 192.
- 48 Chandran, Suba, D. (2010, Jul 19). Indus Waters Governance-II: From 'Letter and Spirit' to 'Letter vs Spirit'. *Institute of Peace and Conflict Studies*.
- 49 UN General Assembly. (2010, Aug 03). *The Human Right to Water and Sanitation: Resolution, A/RES/64/292*. New York: United Nations.
- 50 Op.cit. Chaturvedi. Indus Water Treaty : An Appraisal. p. 3.
- 51 Op.cit. UN General Assembly. *The Human Right to Water and Sanitation*.
- 52 Op.cit. Chaturvedi. *Water a Source for Future Conflicts*. p. 175.
- 53 Joshi, N. M. (2013, Nov). National River Linking Project of India. Hydro Nepal: *Journal of Water, Energy and Environment*, 12. p. 12, 13-19.
- 54 Chandrasekharan, S. (2016, Sep 26). The Indus Water Treaty in Post Uri Situation. *South Asia Analysis Group*, 6174. p. 26.

Bibliography

- 1 Aayog, N. (2018). Composite Water Management Index. New Delhi: *NITI Aayog*.
- 2 Abubakar, F. Z. (2016, Dec 13). Assessing India's Water Threat. *Dawn*. p. 1.
- 3 Adnan, M. (2018). 'Hydro Politics: A Conflict Between Pakistan and India'. *Journal of Political Studies*. p. 177-178.
- 4 Ahad, U. (2017, Nov 01). Hydro Power Projects in J&K State-Potential Scenario. *IJRASET* . 5 (11). p. 7.
- 5 Ahmed, T. (2009, Jul 31). Water Disputes between India and Pakistan-A Potential Casus Belli. *The Henry Jackson Society*.
- 6 Ahmed, D. S. (2016, Dec 1). Water Sector of Pakistan : A Situational Analysis. *UNDP Development Advocate Pakistan*. 3(4). p. 2-23.
- 7 Azeem, T. (2018, Sep 28). Pakistan and the Dam Fund. *The Diplomat*. p. 2.
- 8 Aziz, Sartaj. (2016, Sep 27). Revocation of Indus Waters Treaty can be taken as an act of war'. *Dawn*.
- 9 Bagchi, Indrani and Mohan, Viswa. (2016, Sep 27). Blood and water can't flow together: PM Narendra Modi Gets Tough on Indus Treaty'. *The Times of India*.
- 10 Condon, E. P. (2009). Resource Disputes in South Asia: Water Scarcity and the Potential for Interstate Conflict. *Madison: University of Wisconsin*.
- 11 Chellaney, B. (2011). *Water: Asia's New Battleground*. New Delhi: Harper Collins Publishers India.
- 12 Chellaney, B. (2014). *Water, Peace and War*. New Delhi: Oxford University Press.
- 13 CWC. (2017). *Reassessment Of Water Availability In India Using Space Inputs*. New

- Delhi: Central Water Commission.
- 14 Department, J. P. (2018, Jan 05). *J&K Legislative Council Questions*. Retrieved from J&K Legislative Council: <https://jklegislativecouncil.nic.in/s428>.
- 15 Ebrahim, Z. T. (2018, Mar 18). Is Pakistan running out of fresh water? *Dawn*. p. 1.
- 16 Excelsior, D. (2018, Sep 01). India, Pak Agree to Resolve Issues on Pakal Dul, Lower Kalnai. *Daily Excelsior*. p. 1.
- 17 FAO. (2018). *FAO*. Retrieved from Aquasat: <https://www.fao.org/nr/aquasat>.
- 18 FAO. (2019, Feb 01). *Indus Basin*. Retrieved from <http://www.fao.org/nr/water/aquasat/basins/indus/index.stm>.
- 19 Gettleman, Jeffrey. (2019, Feb 21). India Threatens a New Weapon Against Pakistan: Water. *The New York Times*.
- 20 Gleick, P. H. & Heberger, M. (2014). *Water conflict chronology*. In *The World's Water*. Island Press, Washington, DC. p. 173-219.
- 21 GOI. (2018). *Ministry of Water Resources*. Retrieved from <https://www.mowr.gov.in>.
- 22 Habib, P. A. (2015). *Estimating the Impacts of Climate Change on Sectoral Water Demand in Pakistan*. Islamabad: Action on Climate Today.
- 23 Habib, Z. (2006). Pakistan's Water Resources. *Waters*.
- 24 Hall, Melanie. (2019). *Water wars: Are India and Pakistan Heading for Climate Change-Induced Conflict?* Accessed at <https://p.dw.com/p/3C3tl>.
- 25 Hashim, Asad. (2018, Sep 19). *In Pakistan, Government Attempts to Crowdfund \$12bn For Dams*. Retrieved from: <https://www.aljazeera.com>.
- 26 IDSA. (2010). *Water Security for India: The External Dynamics*. New Delhi: IDSA.

- 27 *Indus Water Treaty* accessed at <https://www.civildcoursesify.in> › indus-water-treaty.
- 28 Institutes, W. R. (2014). *World Risk Atlas*. Retrieved from <https://www.wri.org/application/maps/aqueduct-atlas>.
- 29 IWMI. (2018). *IWMI*. Retrieved 2018, from CGIAR: <https://www.iwmi.cgiar.org>.
- 30 Jo-Ellen Parry, D. H. (2017). *The Vulnerability of Pakistan's Water Sector to the Impacts of Climate Change: Identification of gaps and recommendations for action*. Islamabad: International Institute for Sustainable Development, Canada.
- 31 Johnson, Keith. (2019, Feb 25). *Are India and Pakistan on the Verge of a Water War?* Accessed from foreignpolicy.com.
- 32 Jamir, O. (2016). Understanding India-Pakistan water politics since the signing of the Indus Water Treaty. *Water Policy*, 18(5). p. 1070-1087.
- 33 Khalid, M. (2016, Jun 5). India Out to Damage Pakistan's Water Interests. *The News*. p. 1.
- 34 Katoch, Dhruv. C. (2010). *Waters Of Discord*. *Center For Land Warfare Studies (CLAWS)*. Accessed from <https://www.claws.in>.
- 35 Lafitte, P. R. (2007). *Executive Summary of Experts Determination on Baglihar Hydroelectric Plant*. Lausanne: IWT 1960.
- 36 Mancini, F. (2013). Uncertain Borders: Territorial Disputes in Asia. *Institute of International Political Studies (ISPI) Analysis*, 180(2). p. 1-9.
- 37 Mirchandani Maya. (2019, Feb 25). *Indus Treaty: Why India Cannot Afford to fight Fire With Water*. ORF. Retrived from <https://www.orfonline.org/>.
- 38 Mohan, G. (2018, Mar 31). Pakistan Raises Objection to Indian Hydro Projects. *India Today*. p. 1.

- 39 Murada, V. (2016). *India's Water Security Challenges*. New Delhi: Vij Books Pvt Ltd.
- 40 Mustafa, D. (2010). *Hydropolitics in Pakistan's Indus Basin*. Washington, DC: US Institute of Peace.
- 41 Mustafa, K. (2016, Jun 5). India Out to Damage Pakistan's Water Interests on Kabul River. *The News*. p.1.
- 42 News Desk. (2018, May 20). Pakistan to Discuss India's Violations of Indus Water Treaty with WB President. *The Express Tribune*. p. 2.
- 43 NHPC. (2019, Jan 30). *Projects*. Retrieved from NHPC: <http://www.nhpcindia.com/project.htm?CatId=6>.
- 44 Pakistan, G. o. (2018). *Economic Survey 2017-18*. Islamabad: Government of Pakistan.
- 45 Pamela, Constable. (2011). *Playing with Fire – Pakistan at War with Itself*. New York: Random House, Inc.
- 46 PCRWR. (2018). *National Water Policy*. Islamabad: Government of Pakistan.
- 47 Power, M. o. (2018). *Annual Report 2017-18*. New Delhi: Ministry of Power, Government of India.
- 48 PTI. (2017, Aug 01). India Permitted to Construct Kishanganga, Ratle Projects: World Bank. *Times of India*. p. 1.
- 49 PTI. (2011, Feb 22). Pak Team Inspects Salal Hydro Power Project in Reasi. *Deccan Herald*, p. 1.
- 50 Qamar, U., and Briscoe, J. (2008). *Pakistan's Water Economy Running Dry*.
- 51 Quadir, L. C. (2008). *Water Disputes in South Asia*. National Defence University.

- p. 141-164.
- 52 Reyes, Lara. Water Wars: the Significance of Water Scarcity in India and Pakistan. <https://www.academia.edu/15156902>.
- 53 Reporter, S. (2018, Dec 07). Centre Okays Dam on Ravi, Will Cut Water Flow to Pakistan. *The Times of India*. p. 2.
- 54 Reuters. (2019, Aug 20). Pakistan, India Spar Over Using Water as a Weapon in Kashmir Dispute. Islamabad/ New Delhi.
- 55 Romshoo, S. A. (2016, Oct 02). Why abrogation of the Indus Water Treaty is Not in India's Interest . *The Economic Times*. p. 1.
- 56 Sehrish, Wasif. (2018 mar 18). Water Supply, Demand Gap to Reach 31 % by 2025. *The Express Tribune*.
- 57 Shakil, F. (2018, May 28). New Indian Dam Threatens to Parch Pakistan. *Asia Times*. p. 1.
- 58 Shams, S. (2017, Jul 2). *Water Scarcity in Pakistan – A Bigger Threat Than Terrorism*. Retrieved from World Water Solar: <https://www.worldwatersolar.com>.
- 59 Sharma, Pranay.(2019, Jul 25). Using Water As Weapon? Or As A Solution For Peace? India On A Slippery Pitch. *The Outlook*.
- 60 Sekhar, Ardhendu. Bhol. (2014). *Coercive Diplomacy and Indo-Pak Relations*. New Delhi: Axis Books.
- 61 Sial, A. (2012, Jan 22). *Govt Given Wrong Advice on River Kabul*. Retrieved from Pakistan Today: <https://www.pakistantoday.com.pk>.
- 62 Siddiqi, A. (2011, Aug 01). 'Kashmir and the Politics of Water'. Retrieved from <https://www.aljazeera.com/>.

- 63 Singh, H. (2017). Water Availability in Pakistan. *Indian Defence Review Vol II*, 3.
- 64 Slater, Joanna. (2019, Feb 22). India Wants to Use Water as a Weapon Against Pakistan. A 59-Year-Old Treaty Stands in the Way. *The Washington Post*.
- 65 Technology, P. (2018, Oct 1). *Ratle Hydroelectric Power Plant, Jammu and Kashmir*. Accessed from <https://www.power-technology.com/projects/ratle-hydroelectric-power-plant-jammu-and-kashmir/>.
- 66 Umar, Baba. (2016, Jun 09). Kashmir: A Water War in the Making?. *The Diplomat*.
- 67 WAPDA. (2015, Jan 22). *River Flow in Pakistan*. Retrieved from WAPDA: <http://www.wapda.gov.pk/index.php/river-flow-in-pakistan>.
- 68 Wasif, S. (2016, May 30). Pakistan May Run Dry by 2025. *The Express Tribune*. p. 1.
- 69 Wescoat, J. L. (2018, Jan 08). *Social Hydrology of Channel Flow in Complex River Basins, Punjab, Pakistan*. Retrieved from AGU Publications: <https://doi.org>.
- 70 Wolf, A. T., and Newton, J. T. (2008). Case study of transboundary dispute resolution: The Indus water treaty. *Department of Geosciences, Oregon State University: Corvallis, OR, USA*.

Indus Waters Treaty

September 19, 1960

TREATY BETWEEN THE GOVERNMENT OF INDIA AND THE GOVERNMENT OF PAKISTAN CONCERNING THE MOST COMPLETE AND SATISFACTORY UTILISATION OF THE WATERS OF THE INDUS SYSTEM OF RIVERS**Karachi****PREAMBLE**

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, and for this purpose have named as their plenipotentiaries :

THE GOVERNMENT OF INDIA:

Shri JAWAHARLAL NEHRU,
Prime Minister of India,

and

THE GOVERNMENT OF PAKISTAN
Field Marshal MOHAMMAD AYUB KHAN, HP., H.J.,
President of Pakistan;

who, having communicated to each other their respective Full Powers and having found them in good and due form, have agreed upon the following Articles and Annexures ;

Article I

Definitions

As used in this Treaty:

1. The terms "Article and "Annexure" mean respectively an Article of, and an Annexure to, this Treaty. Except as otherwise indicated, references to Paragraphs are to the paragraphs in the Article or in the Annexure in which the reference is made.
2. The term "Tributary" of a river means any surface channel whether in continuous or intermittent flow and by whatever name called, whose waters in the natural course would fall into that river, e.g. a tributary, a torrent, a natural drainage, an artificial drainage, a nadi, a nallah, a nai, a khad, a cho. The term also includes any sub-tributary or branch or subsidiary channel, by whatever name called, whose waters, in the natural course, would directly or otherwise flow into that surface channel.
3. The term "The Indus," "The Jhelum," "The Chenab," "The Ravi," "The Beas" or "The Sutlej" means the named river (including Connecting Lakes, if any) and all its Tributaries :
Provided however that
 - (i) none of the rivers named above shall be deemed to be a Tributary;
 - (ii) The Chenab shall be deemed to include the river Panjnad; and
 - (iii) the river Chandra and the river Bhaga shall be deemed to be Tributaries of The Chenab.
4. The term "Main" added after Indus, Jhelum, Chenab, Sutlej, Beas or Ravi means the main stem of the named river excluding its Tributaries, but including all channels and creeks of the main stem of that river and such Connecting Lakes as form part of the main stem itself. The Jhelum Main shall be deemed to extend up to Verinag, and the Chenab Main up to the confluence of the river Chandra and the river Bhaga.
5. The term "Eastern Rivers" means The Sutlej, The Beas and The Ravi taken together.

6. The term "Western Rivers" means The Indus, The Jhelum and The Chenab taken together.

7. The term "the Rivers" means all the rivers, The Sutlej, The Beas, The Ravi, The Indus, The Jelum and The Chenab.

8. The term "Connecting Lake" means any lake which receives water from, or yields water to, any of the Rivers; but any lake which occasionally and irregularly receives only the spill of any of the Rivers and returns only the whole or part of that spill is not a Connecting Lake.

9. The term "Agricultural Use" means the use of water for irrigation, except for irrigation of household gardens and public recreational gardens.

The terms "Domestic Use" means the use of water for drinking, washing, bathing, recreation, sanitation (including the conveyance and dilution of sewage and of industrial and other wastes), stock and poultry, and other like purposes;

- (i) household and municipal purposes (including use for household gardens and public recreational gardens); and
- (ii) industrial purposes (including mining, milling and other like purposes);
- (iii) but the term does not include Agricultural Use or use for the generation of hydro-electric power.

10. The term "Non-Consumptive Use" means any control or use of water for navigation, floating of timber or other property, flood protection or flood control, fishing or fish culture, wild life or other like beneficial purposes, provided that, exclusive of seepage and evaporation of water incidental to the control or use, the water (undiminished in volume within the practical range of measurement) remains in, or is returned to, the same river or its Tributaries; but the term does not include Agricultural Use or use for the generation of hydro-electric power.

11. The term "Transition Period" means the period beginning and ending as provided in Article 11(6).

12. The term "Bank" means the International Bank for Reconstruction and Development.

13. The term "Commissioner" means either of the Commissioners appointed under the provisions of Article VIII(1) and the term "Commission" means the Permanent Indus Commission constituted in accordance with Article VIII(3).

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 (within the practical range of measurement) of the daily flow of the water : 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.

14. The term "Effective Date" means the date on which this Treaty takes effect in accordance with the provisions of Article XII, that is, the first of April 1960.

Article II

Provisions Regarding Eastern Rivers

1. All the waters of the Eastern Rivers shall be available for the unrestricted use of India, except as otherwise expressly provided in this Article.

2. Except for Domestic Use and Non-Consumptive Use, Pakistan shall be under an obligation to let flow, and shall not permit any interference with, the waters of the Sutlej Main and the Ravi Main in the reaches where these rivers flow in Pakistan and have not yet finally crossed into Pakistan. The Points of final crossing are the following : (a) near the new Hasta Bund upstream of Suleimanke in the case of the Sutlej Main, and (b) about one and a half miles upstream of the syphon for the B-R-B-D Link in the case of the Ravi Main.

3. Except for Domestic Use, Non-Consumptive Use and Agricultural Use (as specified in Annexure B), Pakistan shall be under an obligation to let flow, and shall not permit any interference with, the waters (while flowing in Pakistan) of any Tributary which in its natural course joins the Sutlej Main or the Ravi Main before these rivers have finally crossed into Pakistan.

4. All the waters, while flowing in Pakistan, of any Tributary which, in its natural course, joins the Sutlej Main or the Ravi Main after these rivers have finally crossed into Pakistan shall be available for the unrestricted use of Pakistan : Provided however that this provision

shall not be construed as giving Pakistan any claim or right to any releases by India in any such Tributary. If Pakistan should deliver any of the waters of any such Tributary, which on the Effective Date joins the Ravi Main after this river has finally crossed into Pakistan, into a reach of the Ravi Main upstream of this crossing, India shall not make use of these waters; each Party agrees to establish such discharge observation stations and make such observations as may be necessary for the determination of the component of water available for the use of Pakistan on account of the aforesaid deliveries by Pakistan, and Pakistan agrees to meet the cost of establishing the aforesaid discharge observation stations and making the aforesaid observations.

5. There shall be a Transition Period during which, to the extent specified in Annexure H, India shall

- (i) limit its withdrawals for Agricultural Use,
- (ii) limit abstractions for storages, and
- (iii) make deliveries to Pakistan from the Eastern Rivers.

6. The Transition Period shall begin on 1st April 1960 and it shall end on 31st March 1970, or, if extended under the provisions of Part 8 of Annexure H, on the date up to which it has been extended. In any event, whether or not the replacement referred to in Article IV(1) has been accomplished, the Transition Period shall end not later than 31st March 1973.

7. If the Transition Period is extended beyond 31st March 1970, the Provisions of Article V(5) shall apply.

8. If the Transition Period is extended beyond 31st March 1970, the provisions of Paragraph (5) shall apply during the period of extension beyond 31st March 1970.

9. During the Transition Period, Pakistan shall receive for unrestricted use the waters of the Eastern Rivers which are to be released by India in accordance with the provisions of Annexure H. After the end of the Transition Period, Pakistan shall have no claim or right to releases by India of any of the waters of the Eastern Rivers. In case there are any releases, Pakistan shall enjoy the unrestricted use of the waters so released after they have finally crossed into Pakistan : Provided that in the event that Pakistan makes any use of these waters, Pakistan shall not acquire any right whatsoever, by prescription or otherwise, to a continuance

of such releases or such use.

Article III

Provisions Regarding Western Rivers

1. Pakistan shall 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).
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 item (c) (11) of Paragraph 5 of Annexure C) in the case of each of the rivers, The Indus, The Jhelum and The Chenab, to the drainage basin thereof
 - (i) Domestic Use;
 - (ii) Non-Consumptive Use;
 - (iii) Agricultural Use, as set out in Annexure C; and
 - (iv) Generation of hydro-electric power, as set out in Annexure D.
3. Pakistan shall have the unrestricted use of all waters originating from sources other than the Eastern Rivers which are delivered by Pakistan into The Ravi or The Sutlej, and India shall not make use of these waters. Each Party agrees to establish such discharge observation stations and make such observations as may be considered necessary by the Commission for the determination of the component of water available for the use of Pakistan on account of the aforesaid deliveries by Pakistan.
4. Except as provided in Annexure D and E, India shall not store any water of, or construct any storage works on, the Western Rivers.

Article IV

Provisions Regarding Eastern Rivers and Western Rivers

1. Pakistan shall use its best endeavours to construct and bring into operation, with due regard to expedition and economy, that part of a system of works which will accomplish the replacement, from the Western Rivers and other sources, of water supplies for irrigation canals in Pakistan which, on 15th August 1947, were dependent on water supplies from the

Eastern Rivers .

2. Each Party agrees that any Non-Consumptive Use made by it shall be so made as not to materially change, on account of such use, the flow in any channel to the prejudice of the uses on that channel by the other Party under the provisions of this Treaty. In executing any scheme of flood protection or flood control each Party will avoid, as far as practicable, any material damage to the other Party, and any such scheme carried out by India on the Western Rivers shall not involve any use of water or any storage in addition to that provided under Article III.

3. Nothing in this Treaty shall be construed as having the effect of preventing either Party from undertaking schemes of drainage, river training, conservation of soil against erosion and dredging, or from removal of stones, gravel or sand from the beds of the Rivers :
Provided that

- (i) in executing any of the schemes mentioned above, each Party will avoid, as far as practicable, any material damage to the other Party;
- (ii) any such scheme carried out by India on the Western Rivers shall not involve any use of water or any storage in addition to that provided under Article III;
- (iii) except as provided in Paragraph (5) and Article VII(1)(b), India shall not take any action to increase the catchment area, beyond the area on the Effective Date, of any natural or artificial drainage or drain which crosses into Pakistan, and shall not undertake such construction or remodelling of any drainage or drain which so crosses or falls into a drainage or drain which so crosses as might cause material damage in Pakistan or entail the construction of a new drain or enlargement of an existing drainage or drain in Pakistan; and
- (iv) should Pakistan desire to increase the catchment area, beyond the area on the Effective Date, of any natural or artificial drainage or drain, which receives drainage waters from India, or, except in an emergency, to pour any waters into it in excess of the quantities received by it as on the Effective Date, Pakistan shall, before undertaking any work for these purposes, increase the capacity of that drainage or drain to the extent necessary so as not to impair its efficacy for

dealing with drainage waters received from India as on the Effective Date.

4. Pakistan shall maintain in good order its portions of the drainages mentioned below with capacities not less than the capacities as on the Effective Date

- (i) Hudiara Drain
- (ii) Kasur Nala
- (iii) Salimshah Drain
- (iv) Fazilka Drain.

5. If India finds it necessary that any of the drainages mentioned in Paragraph (4) should be deepened or widened in Pakistan, Pakistan agrees to undertake to do so as a work of public interest, provided India agrees to pay the cost of the deepening or widening.

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

7. Neither Party will take any action which would have the effect of diverting the Ravi Main between Madhopur and Lahore, or the Sutlej Main between Harike and Suleimanke, from its natural channel between high banks.

8. 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. 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.

9. Each Party declares its intention to operate its storage dams, barrages and irrigation canals in such manner, consistent with the normal operations of its hydraulic systems, as to avoid, as far as feasible, material damage to the other Party.

10. Each Party declares its intention to prevent, as far as practicable, undue pollution of the waters of the Rivers which might affect adversely uses similar in nature to those to which the waters were put on the Effective Date, and agrees to take all reasonable measures to

ensure that, before any sewage or industrial waste is allowed to flow into the Rivers, it will be treated, where necessary, in such manner as not materially to affect those uses :

Provided that the criterion of reasonableness shall be the customary practice in similar situations on the Rivers.

11. The Parties agree to adopt, as far as feasible, appropriate measures for the recovery, and restoration to owners, of timber and other property floated or floating down the Rivers, subject to appropriate charges being paid by the owners.

The use of water for industrial purposes under Articles 11(2), 11(3) and HIM shall not exceed in the case of an industrial process known on the Effective Date, such quantum of use as was customary in that process on the Effective Date;

- (i) in the case of an industrial process not known on the Effective Date :
 - a. such quantum of use as was customary on the Effective Date in similar or in any way comparable industrial processes; or
 - b. if there was no industrial process on the Effective Date similar or in any way comparable to the new process, such quantum of use as would not have a substantially adverse effect on the other Party.

12. Such part of any water withdrawn for Domestic Use under the provisions of Articles 11(3) and 11(2) as is subsequently applied to Agricultural Use shall be accounted for as part of the Agricultural Use specified in Annexure B and Annexure C respectively; each Party will use its best endeavours to return to the same river (directly or through one of its Tributaries) all water withdrawn there from for industrial purposes and not consumed either in the industrial processes for which it was withdrawn or in some other Domestic Use.

13. 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.

14. Except as otherwise required by the express provisions of this Treaty, nothing in this Treaty shall be construed as affecting existing territorial rights over the waters of any of the Rivers or as affecting existing property rights under municipal law over such waters or beds or banks.

Article V

Financial Provisions

1. In consideration of the fact that the purpose of part of the system of works referred to in Article IV(1) is the replacement, from the Western Rivers and other sources, of water supplies for irrigation canals in Pakistan which, on 15th August 1947, were dependent on water supplies from the Eastern Rivers, India agrees to make a fixed contribution of Pounds Sterling 62,060,000 towards the costs of these works. The amount in Pounds Sterling of this contribution shall remain unchanged irrespective of any alteration in the par value of any currency.
2. The sum of Pounds Sterling 62,060,000 specified in Paragraph (1) shall be paid in ten equal annual instalments on the 1st of November of each year. The first of such annual instalments shall be paid on 1st November 1960, or if the Treaty has not entered into force by that date, then within one month after the Treaty enters into force.
3. Each of the instalments specified in Paragraph (2) shall be paid to the Bank for the credit of the Indus Basin Development Fund to be established and administered by the Bank, and payment shall be made in Pounds Sterling, or in such other currency or currencies as may from time to time be agreed between India and the Bank.
4. The payments provided for under the provisions of Paragraph (3) shall be made without deduction or set-off on account of any financial claims of India on Pakistan arising otherwise than under the provisions of this Treaty : Provided that this provision shall in no way absolve Pakistan from the necessity of paying in other ways debts to India which may be outstanding against Pakistan.
5. If, at the request of Pakistan, the Transition Period is extended in accordance with the provisions of Article 11(6) and of Part 8 of Annexure H, the Bank shall thereupon pay to India out of the Indus Basin Development Fund the appropriate amount specified in the Table below.

TABLE

| Period of Aggregate | Payment of India |
|---|-------------------------|
| Extension Payment to of Transition Period | |
| One year | stg. 3,125,000 |
| Two years. | stg 6,406,250 |
| Three years | stg 9,850,000 |

6. The provisions of Article IV(1) and Article V(1) shall not be construed as conferring upon India any right to participate in the decisions as to the system of works which Pakistan constructs pursuant to Article IV(1) or as constituting an assumption of any responsibility by India or as an agreement by India in regard to such works.

7. Except for such payments as are specifically provided for in this Treaty, neither Party shall be entitled to claim any payment for observance of the provisions of this Treaty or' to make any charge for water received from it by the other Party.

Article VI

Exchange of Data

1. The following data with respect to the flow in, and utilisation of the waters of, the Rivers shall be exchanged regularly between the Parties :

- (i) Daily (or as observed or estimated less frequently) gauge and discharge data relating to flow of the Rivers at all observation sites.
- (ii) Daily extractions for or releases from reservoirs.
- (iii) Daily withdrawals at the heads of all canals operated by government or by a government agency (hereinafter in this Article called canals), including link canals.
- (iv) Daily escapages from all canals, including link canals.
- (v) Daily deliveries from link canals.

- (vi) These data 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 not later than three months after the end of the month to which they relate : Provided 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. Should one Party request the supply of any of these-data by telegram, telephone, or wireless, it shall reimburse the other Party for the cost of transmission.

2. If, in addition to the data specified in Paragraph (1) of this Article, either Party requests the supply of any data relating to the hydrology of the Rivers, or to canal or reservoir operation connected with the Rivers, or to any provision of this Treaty, such data shall be supplied by the other Party to the extent that these are available.

Article VII

Future Co-operation

1. 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. In particular :

- (i) 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.
- (ii) 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, carry out such new drainage works as may be required in connection with new drainage works of the other Party.
- (iii) At the request of either Party, the two Parties may, by mutual agreement, co-operate in undertaking engineering works on the Rivers.

The formal arrangements, in each case, shall be as agreed upon between the Parties.

2. 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. 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.

Article VIII

Permanent Indus Commission

1. 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. Unless either Government should decide to take up any particular question directly with the other Government, 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, and, in particular, with respect to

- (i) the furnishing or exchange of information or data provided for in the Treaty; and
- (ii) the giving of any notice or response to any notice provided for in the Treaty.
- (iii) The status of each Commissioner and his duties and responsibilities towards his Government will be determined by that Government.

2. The two Commissioners shall together form the Permanent Indus Commission.

The purpose and functions of the Commission shall be to establish and maintain co-operative arrangements for the, implementation of this Treaty, to promote co-operation between the Parties in the development of the waters of the Rivers and, in particular, to study and report to the two Governments on any problem relating to the development of

the waters of the Rivers which may be jointly referred to the Commission by the two Governments : in the event that a reference is made by one Government alone, the Commissioner of the other Government shall obtain the authorization of his Government before he proceeds to act on the reference;

- (i) to make every effort to settle promptly, in accordance with the provisions of Article IX(1), any question arising there under;
- (ii) to 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,
- (iii) 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; and
- (iv) to take, during the Transition Period, such steps as may be necessary for the implementation of the provisions of Annexure H.

3. The Commission shall meet regularly at least once a year, alternately in India and Pakistan. This regular annual meeting shall be held in November or in such other month as may be agreed upon between the Commissioners. The Commission shall also meet when requested by either Commissioner.

4. To enable the Commissioners to perform their functions in the Commission, each Government agrees to accord to the Commissioner of the other Government the same privileges and immunities as are accorded to representatives of member States to the principal and subsidiary organs of the United Nations under Sections 11, 12 and 13 of Article IV of the Convention on the Privileges and Immunities of the United Nations (dated 13th February, 1946) during the periods specified in those Sections. It is understood and agreed that these privileges and immunities are accorded to the Commissioners not for the personal benefit of the individuals themselves but in order to safeguard the independent exercise of their functions in connection with the Commission; consequently, the Government appointing the Commissioner not only has the right but is under a duty to waive the immunity of its Commissioner in any case where, in the opinion of the appointing Government, the immunity

would impede the course of justice and can be waived without prejudice to the purpose for which the immunity is accorded.

5. For the purposes of the inspections specified in Paragraph (4) (c) and (d), each Commissioner may be accompanied by two advisers or assistants to whom appropriate facilities will be accorded.

6. The Commission shall submit to the Government of India and to the Government of Pakistan, before the first of June of every year, a report on its work for the year ended on the preceding 31st of March, and may submit to the two Governments other reports at such times as it may think desirable.

7. Each Government shall bear the expenses of its Commissioner and his ordinary staff. The cost of any special staff required in connection with the work mentioned in Article VII(1) shall be borne as provided therein.

8. The Commission shall determine its own procedures.

Article IX

Settlement of Differences and Disputes

1. 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.

2. 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, which shall be dealt with as follows :

- (i) Any difference which, in the opinion of either Commissioner, falls within the provisions of Part I of Annexure F shall, at the request of either Commissioner, be dealt with by a Neutral Expert in accordance with the provisions of Part 2 of Annexure F;
- (ii) If the difference does not come within the provisions of Paragraph (2) (a), or if a Neutral Expert, in accordance with the provisions of Paragraph 7 of

Annexure F, has informed the Commission that, in his opinion, the difference, or a part thereof, should be treated as a dispute, then a dispute will be deemed to have arisen which shall be settled in accordance with the provisions of Paragraphs (3), (4) and (5) :

Provided that, at the discretion of the Commission, any difference may either be dealt with by a Neutral Expert in accordance with the provisions of Part 2 of Annexure F or be deemed to be a dispute to be settled in accordance with the provisions of Paragraphs (3), (4) and (5), or may be settled in any other way agreed upon by the Commission.

3. As soon as a dispute to be settled in accordance with this and the succeeding paragraphs of this Article has arisen, the Commission shall, at the request of either Commissioner, report the fact to the two Governments, as early as practicable, stating in its report the points on which the Commission is in agreement and the issues in dispute, the views of each Commissioner on these issues and his reasons therefore. (4) Either Government may, following receipt of the report referred to in Paragraph (3), or if it comes to the conclusion that the report is being unduly delayed in the Commission, invite the other Government to resolve the dispute by agreement. In doing so it shall state the names of its negotiators and their readiness to meet with the negotiators to be appointed by the other Government at a time and place to be indicated by the other Government. To assist in these negotiations, the two Governments may agree to enlist the services of one or more mediators acceptable to them.

. A Court of Arbitration shall be established to resolve the dispute in the manner provided by Annexure G upon agreement between the Parties to do so; or

- (i) at the request of either Party, if, after negotiations have begun pursuant to Paragraph (4), in ' its opinion the dispute is not likely to be resolved by negotiation or mediation; or
- (ii) at the request of either Party, if, after the expiry of one month following receipt by the other Government of the invitation referred to in Paragraph (4), that Party comes to the conclusion that the other Government is unduly delaying the negotiations.

4. The provisions of Paragraphs (3), (4) and (5) shall not apply to any difference while it is being dealt with by a Neutral Expert.

Article X

Emergency Provision

If, at any time prior to 31st March 1965, Pakistan should represent to the Bank that, because of, the outbreak of large-scale international hostilities arising out of causes beyond the control of Pakistan, it is unable to obtain from abroad the materials and equipment necessary for the completion, by 31st March 1973, of that part of the system of works referred to in Article IVU) which relates to the replacement referred to therein, (hereinafter referred to as the replacement element") and if, after consideration of this representation in consultation with India, the Bank is of the opinion that

1. these hostilities are on a scale of which the consequence is that Pakistan is unable to obtain in time such materials and equipment as must be procured from abroad for the completion, by 31st March 1973, of the replacement element, and

2. since the Effective Date, Pakistan has taken all reasonable steps to obtain the said materials and equipment and, with such resources of materials and equipment as have been available to Pakistan both from within Pakistan and from abroad, has carried forward the construction of the replacement element with due diligence and all reasonable expedition,

the Bank shall immediately notify each of the Parties accordingly. The Parties undertake, without prejudice to the provisions of Article XII (3) and (4), that, on being so notified, they will forthwith consult together and enlist the good offices of the Bank in their consultation, with a view to reaching mutual agreement as to whether or not, in the light of all the circumstances then prevailing, any modifications of the provisions of this Treaty are appropriate and advisable and, if so, the nature and the extent of the modifications.

Article XI

General Provisions

1. It is expressly understood that

- (i) this Treaty governs the rights and obligations of each Party in relation to the other with respect only to the use of the waters of the Rivers and matters incidental thereto; and
- (ii) nothing contained in this Treaty, and nothing arising out of the execution thereof, shall be construed as constituting a recognition or waiver (whether tacit, by implication or otherwise) of any rights or claims whatsoever of either of the Parties other than those rights or claims which are expressly recognized or waived in this Treaty.

Each of the Parties agrees that it will not invoke this Treaty, anything contained therein, or anything arising out of the execution thereof, in support of any of its own rights or claims whatsoever or in disputing any of the rights or claims whatsoever of the other Party, other than those rights or claims which are expressly recognized or waived in this Treaty.

2. Nothing in this Treaty shall be construed by the Parties as in any way establishing any general principle of law or any precedent.
3. The rights and obligations of each Party under this Treaty shall remain unaffected by any provisions contained in, or by anything arising out of the execution of, any agreement establishing the Indus Basin Development Fund.

Article XII

Final Provisions

1. This Treaty consists of the Preamble, the Articles hereof and Annexures A to H hereto, and may be cited as "The Indus Waters Treaty 1960".
2. This Treaty shall be ratified and the ratifications thereof shall be exchanged in New Delhi. It shall enter into force upon the exchange of ratifications, and will then take effect retrospectively from the first of April 1960.
3. The provisions of this Treaty may from time to time be modified by a duly ratified treaty concluded for that purpose between the two Governments.
4. The provisions of this Treaty, or, the provisions of this Treaty as modified under the

provisions of Paragraph (3), shall continue in force until terminated by a duly ratified treaty concluded for that purpose between the two Governments.

IN WITNESS WHEREOF the respective Plenipotentiaries have signed this Treaty and have hereunto affixed their seals.

DONE in triplicate in English at Karachi on this Nineteenth day of September 1960.

For the Government of India
(Sd) JAWAHARLAL NEHRU

For the Government of Pakistan
(Sd) MOHAMMAD AYUB KHAN
Field Marshal, H.P., H.J.

For the International Bank for Reconstruction and Development for the purposes specified in Articles V and X and Annexures F, G and H:

(Sd) W.A.B. ILIFF

ANNEXURE A-EXCHANGE OF NOTES BETWEEN GOVERNMENT OF INDIA
AND GOVERNMENT OF PAKISTAN

I. Note dated 19th September 1960, from the High Commissioner for India in Pakistan, Karachi, to the Minister for Foreign Affairs and Commonwealth Relations, Government of Pakistan.

19th September, 1960

EXCELLENCY:

I have been instructed by my Government to communicate to you the following :

"The Government of India agrees that, on the ratification of the Indus Waters Treaty 1960, the Inter-Dominion Agreement on the Canal Water Dispute signed at New Delhi on 4th May 1948 (of which a copy is annexed hereto) and the rights and obligations of either party thereto claimed under, or arising out of, that Agreement shall be without effect as from 1st April 1960.

The position of the Government of India stated above and Your Excellency's Note of today's date stating the position of the Government of Pakistan on this question will form part of Annexure A to the Indus Waters Treaty 1960."

Accept, Excellency, the renewed assurance of my highest consideration.

QUESTIONNAIREPOTENTIAL OF INDIA'S NORTHERN RIVERS FOR LEVERAGING CONFLICTRESOLUTION WITH PAKISTAN

“Water is a Strategic Resource” being scarce & essential for socio-economic-political growth of any nation. Demand for water is ever increasing with concurrent decrease in its availability. Both India and Pakistan are largely dependent for waters of the Indus basin with Pakistan drawing 85% of its water from it.

Control & use of waters of Indus basin is governed by the Indus Water Treaty (IWT) which gave exclusive use of Eastern Rivers (Sutlej, Beas & Ravi) to India & Western Rivers (Indus, Chenab & Jhelum) to Pakistan with limited usage rights to India. Due to their origin, these rivers provide distinct advantage to India to control their availability and use by Pakistan. **In context of this Study, India’s northern rivers primarily refer to Indus, Chenab & Jhelum.**

Pakistan continues to 'bleed India through a thousand cuts', using covert and low-intensity warfare with militancy. Full scale conventional war with Pakistan, though an option, would be an impediment in India’s growth towards progress.

Economic strangulation & diplomatic isolation of Pakistan are positive initiatives, however, unabated actions by Pakistan towards destabilisation of India, J & K in particular, and continued state of denial need to be addressed with a firm hand. Towards this, leveraging of India’s northern rivers may provide a viable option for conflict resolution with Pakistan.

Q1. Water is one of the significant geo-political factors in the Indo Pak relationship, disagreements over which can be a source of conflict.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q2. Full fledged conventional operations against Pakistan will be in the interest of India & more effective to counter their anti India activities rather than use of soft power including diplomatic & economic isolation and use of water as a conflict resolution tool.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q3. Re-negotiating IWT or even regulating waters of the northern rivers to their full potential (within the ambit of IWT) has the potential to severely affect Pakistan.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q4. Control and use of northern rivers offensively during war is justified and will act as an effective instrument of deterrence during 'No War, No Peace' scenario.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q5. India needs to create additional joint civil and military structures to regulate waters of its northern rivers for immediate use during hostile situations.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q6. Adequate water control structures have been constructed by India over its northern rivers in J & K to utilize their water for leveraging conflict resolution with Pakistan.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q7. India should not breach the IWT while constructing water regulating and control structures over its northern rivers and develop complete capability in accordance with provisions of IWT only.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q8. Construction & development of northern rivers will benefit the people of J & K and will be supported by them.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q9. Greater control of northern rivers by India will provide an effective tool for leveraging conflict resolution with Pakistan.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q10. India should not use water as a strategic deterrence against Pakistan as it would violate the IWT (IWT has withstood the test of time for past 60 years).

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q11. Any construction of water control/ regulating structures over northern rivers will be strongly objected by Pakistan.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q12. Construction of water control/ regulating structures over northern rivers will be strongly objected by world community (less Pakistan) including World Bank, IMF and UN.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q13. India should not undertake offensive actions like starving/ flooding Pakistan employing its northern rivers as a Quid-pro-quo against Pakistan sponsored anti India activities as it is against the tenets of humanity and just behaviour.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q14. There is a pressing need for India to build a strong counter narrative through diplomatic initiatives to re-negotiate the IWT.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q15. India should unilaterally abrogate the IWT to safeguard its national interests.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q16. India needs to highlight own criticality of water & losses to people of J & K due to unfavourable conditions of IWT for leveraging opinion of the world community for re-negotiating IWT.

- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q17. Abrogation of the IWT by India will also affect its water sharing arrangements with other neighbours.

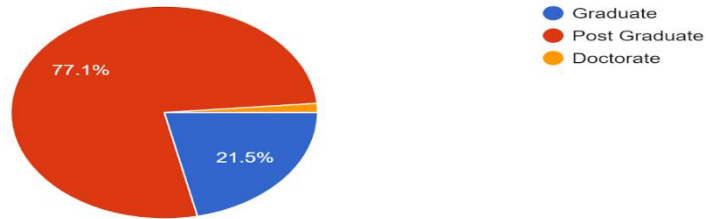
- (a) Strongly disagree
- (b) Disagree
- (c) Not sure
- (d) Agree
- (e) Strongly agree

Q18. Recommendations on water sharing in future with Pakistan and revisiting IWT.

ANALYSIS OF RESPONSES TO THE QUESTIONNAIRE

Education Qualification of Respondents

Education Qualification
144 responses



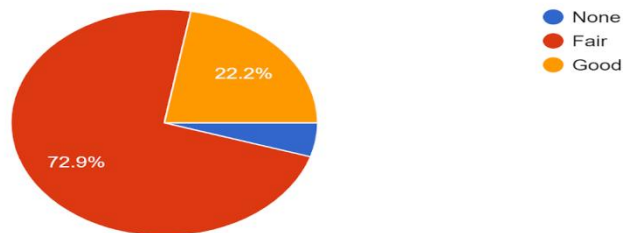
Professional Background (Occupation) of Respondents

Occupation
144 responses



Respondents’ Knowledge of the Topic

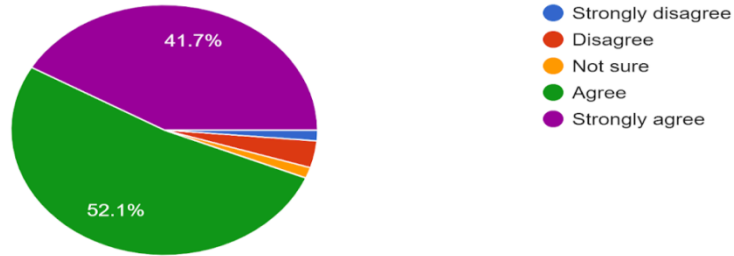
Knowledge of the subject
144 responses



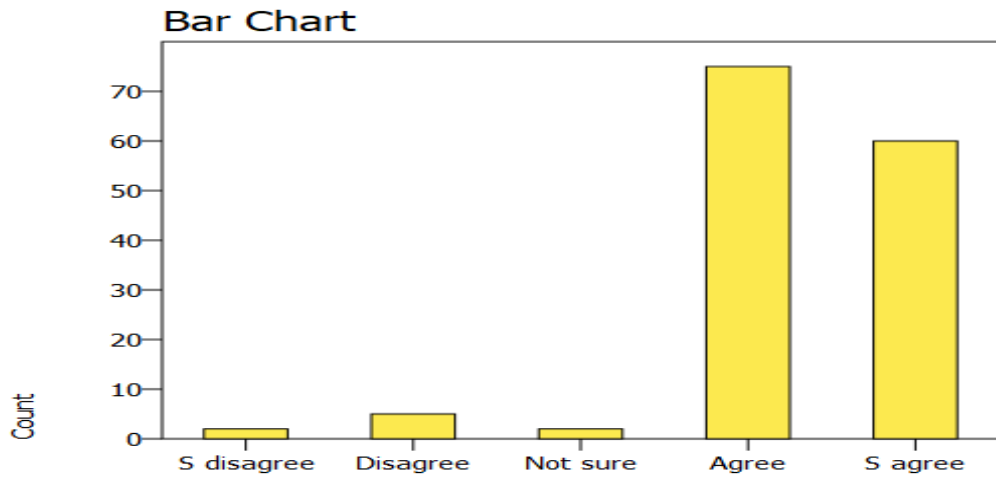
Question 1

Water is one of the significant socio-geo-political factors in the Indo Pak relationship, disagreements over which can be a source of conflict.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 2 | 1.39 | 1.39 | 1.39 |
| Disagree | 2 | 5 | 3.47 | 3.47 | 4.86 |
| Not sure | 3 | 2 | 1.39 | 1.39 | 6.25 |
| Agree | 4 | 75 | 52.08 | 52.08 | 58.33 |
| S agree | 5 | 60 | 41.67 | 41.67 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

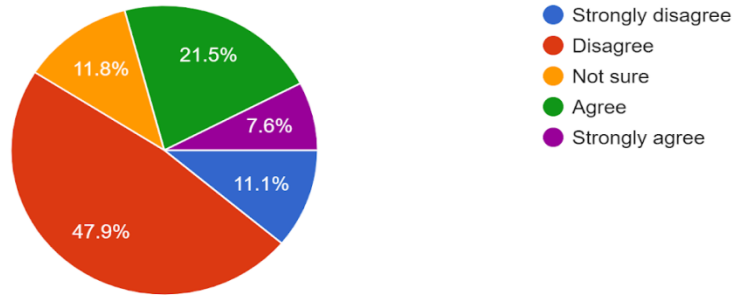


Analysis. It was unanimously agreed by 94% of the respondents that water is one of the significant geo-political factors in the Indo Pak relationship, disagreements over which can be a source of conflict. It would be axiomatic to state that it could have potential as well, to resolve conflicts.

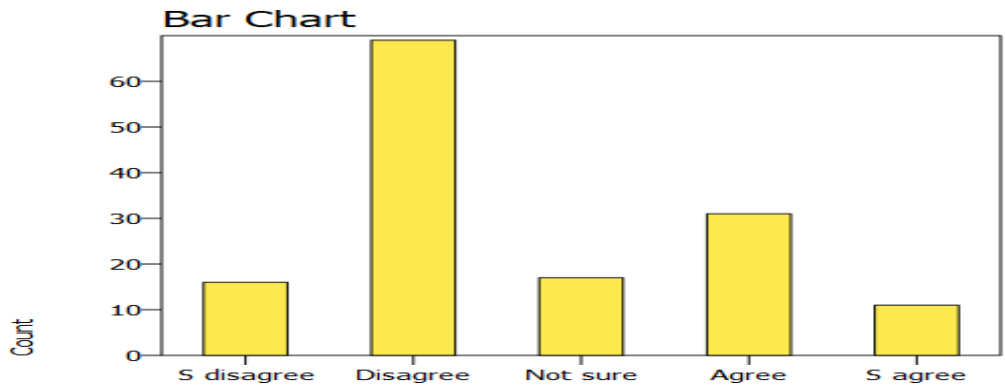
Question 2

Full fledged conventional operations against Pakistan will be in the interest of India & more effective to counter their anti India activities rather than use of water as a conflict resolution tool.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|--------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 16 | 11.11 | 11.11 | 11.11 |
| Disagree | 2 | 69 | 47.92 | 47.92 | 59.03 |
| Not sure | 3 | 17 | 11.81 | 11.81 | 70.83 |
| Agree | 4 | 31 | 21.53 | 21.53 | 92.36 |
| S agree | 5 | 11 | 7.64 | 7.64 | 100.00 |
| <i>Total</i> | | 144 | 100.0 | 100.0 | |

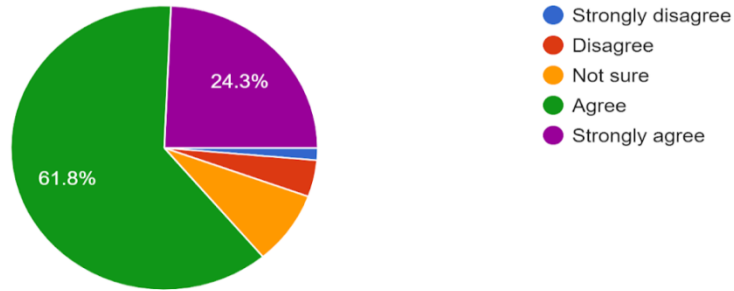


Analysis. 59% of the respondents were of the opinion that use of soft power including diplomatic and economic isolation and use of water as a conflict resolution tool is likely to be more effective tool to counter Pakistan’s anti India activities. 29% of the respondents, however, felt that use of conventional military action against Pakistan would serve India’s interests better.

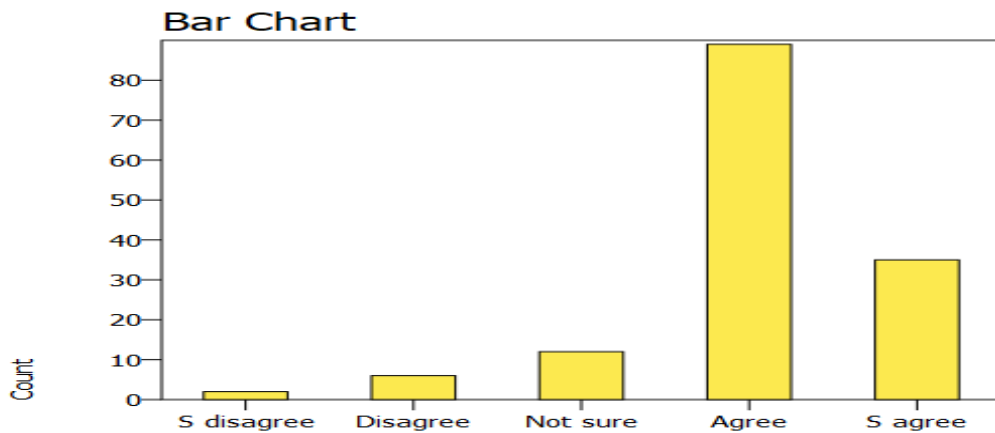
Question 3

Re-negotiating IWT or even regulating waters of the northern rivers to their full potential (within the ambit of IWT) has the potential to severely affect Pakistan.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 2 | 1.39 | 1.39 | 1.39 |
| Disagree | 2 | 6 | 4.17 | 4.17 | 5.56 |
| Not sure | 3 | 12 | 8.33 | 8.33 | 13.89 |
| Agree | 4 | 89 | 61.81 | 61.81 | 75.69 |
| S agree | 5 | 35 | 24.31 | 24.31 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

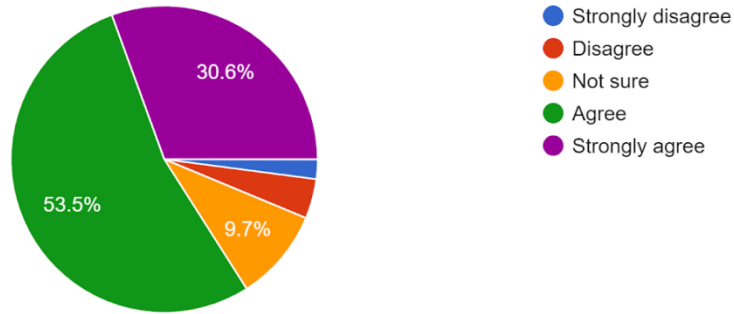


Analysis. It was strongly felt by the respondents (86%) that re-negotiating the IWT or even regulating waters of the northern rivers to their full potential (within the ambit of IWT) has the potential to severely affect Pakistan

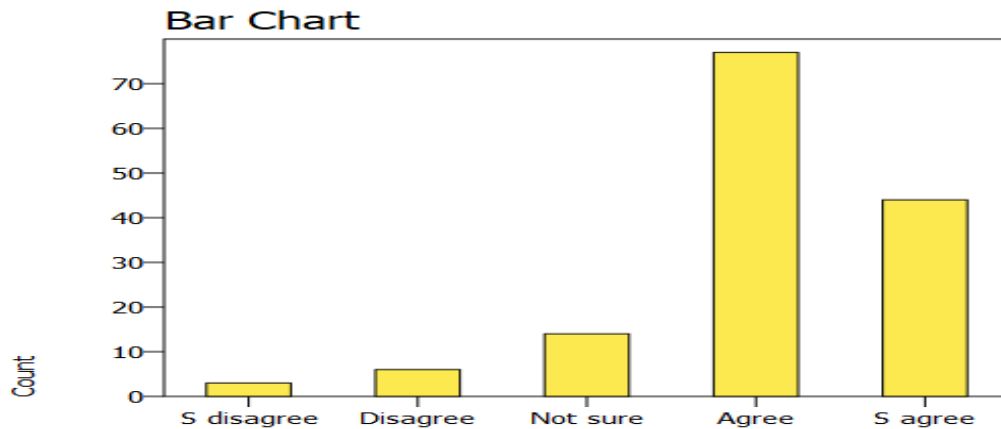
Question 4

Control and use of northern rivers offensively during war is justified and will act as an effective instrument of deterrence during 'No War, No Peace' scenario.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 3 | 2.08 | 2.08 | 2.08 |
| Disagree | 2 | 6 | 4.17 | 4.17 | 6.25 |
| Not sure | 3 | 14 | 9.72 | 9.72 | 15.97 |
| Agree | 4 | 77 | 53.47 | 53.47 | 69.44 |
| S agree | 5 | 44 | 30.56 | 30.56 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

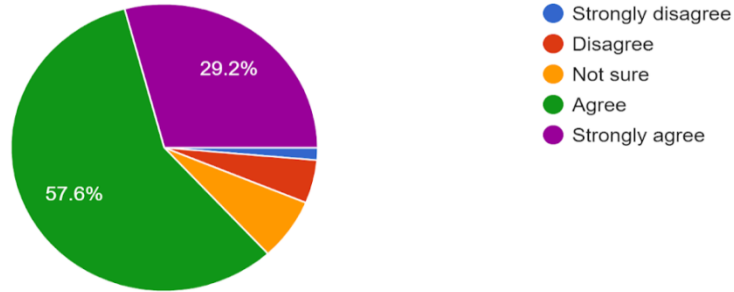


Analysis. A majority of respondents (84%) were of the opinion that control and use of northern rivers offensively during war is justified and will act as an effective instrument of deterrence during 'No War, No Peace' scenario.

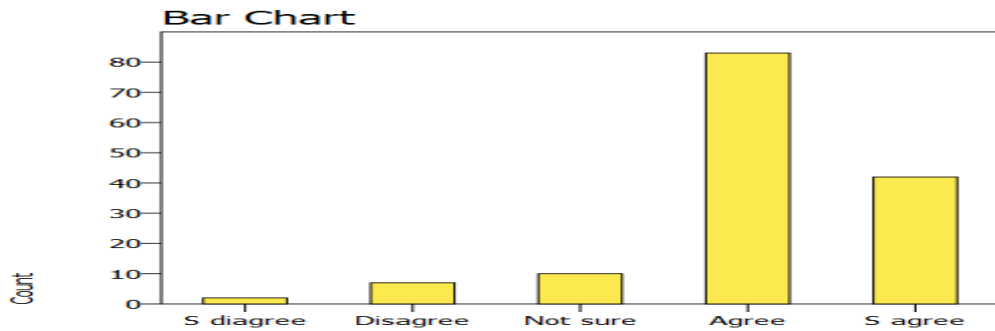
Question 5

India needs to create additional joint civil and military structures to regulate waters of its northern rivers for immediate use during hostile situations.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 2 | 1.39 | 1.39 | 1.39 |
| Disagree | 2 | 7 | 4.86 | 4.86 | 6.25 |
| Not sure | 3 | 10 | 6.94 | 6.94 | 13.19 |
| Agree | 4 | 83 | 57.64 | 57.64 | 70.83 |
| S agree | 5 | 42 | 29.17 | 29.17 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

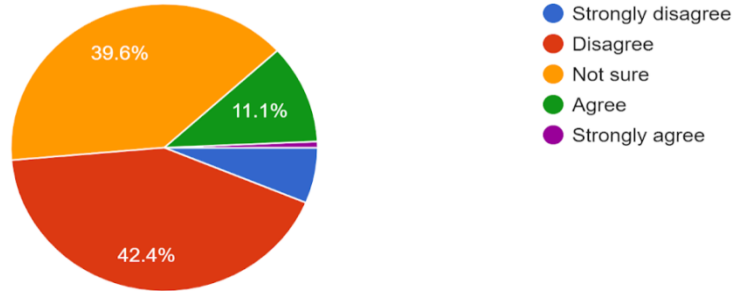


Analysis. A strong need has been expressed by respondents (87%) to create additional joint civil and military structures by India to regulate waters of its northern rivers for immediate use during hostile situations. These would serve the dual purpose of adequate response during hostilities and at the same time meet the socio economic requirements of the UT of J&K and the nation.

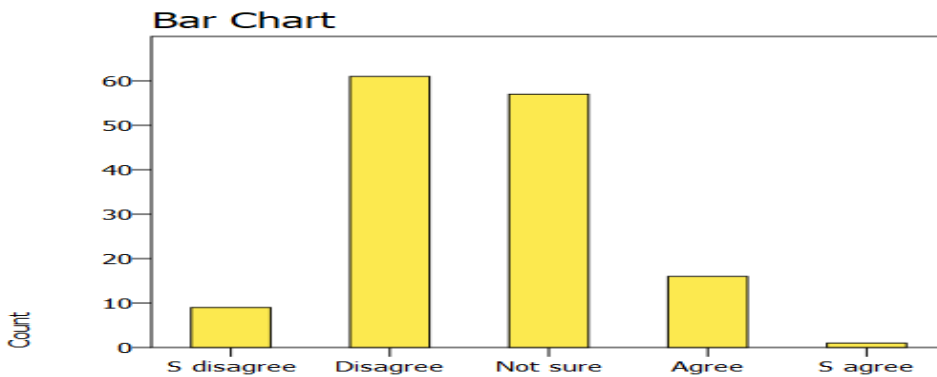
Question 6

Adequate water control structures have been constructed by India over its northern rivers in J & K to utilize their water for leveraging conflict resolution with Pakistan.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 9 | 6.25 | 6.25 | 6.25 |
| Disagree | 2 | 61 | 42.36 | 42.36 | 48.61 |
| Not sure | 3 | 57 | 39.58 | 39.58 | 88.19 |
| Agree | 4 | 16 | 11.11 | 11.11 | 99.31 |
| S agree | 5 | 1 | .69 | .69 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

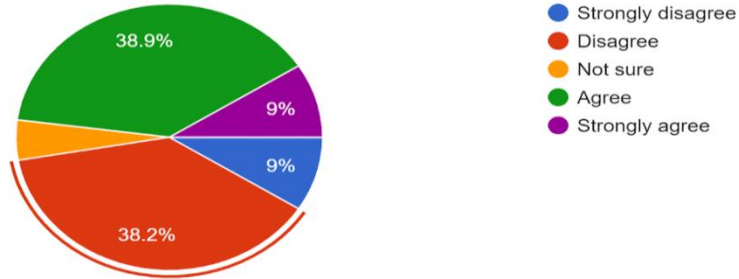


Analysis. 49% of the respondents (49%) disagreed that adequate water control structures have been constructed by India over its northern rivers in J & K to utilize their waters for leveraging conflict resolution with Pakistan. Substantial respondents (39.6%) were not sure of the capability of the existing water control structures for harnessing their potential as a conflict resolution tool with Pakistan

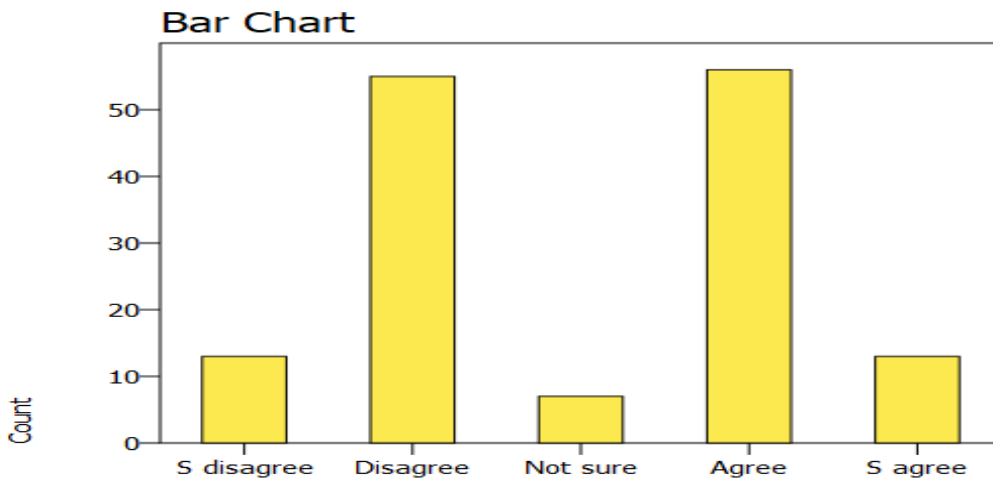
Question 7

India should not breach the IWT while constructing water regulating and control structures over its northern rivers and develop complete capability in accordance with provisions of IWT only.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 13 | 9.03 | 9.03 | 9.03 |
| Disagree | 2 | 55 | 38.19 | 38.19 | 47.22 |
| Not sure | 3 | 7 | 4.86 | 4.86 | 52.08 |
| Agree | 4 | 56 | 38.89 | 38.89 | 90.97 |
| S agree | 5 | 13 | 9.03 | 9.03 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

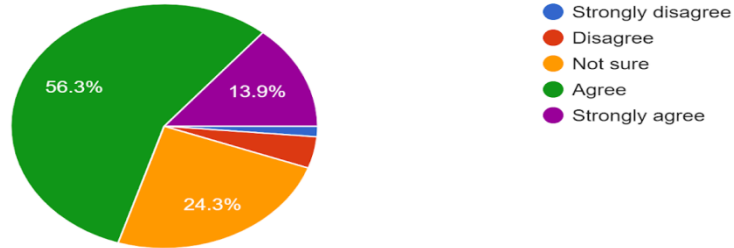


Analysis. The respondents are divided in their opinion (47% each) on whether or not India should breach the IWT while constructing water regulating and control structures over its northern rivers and develop complete capability in accordance with provisions of IWT only

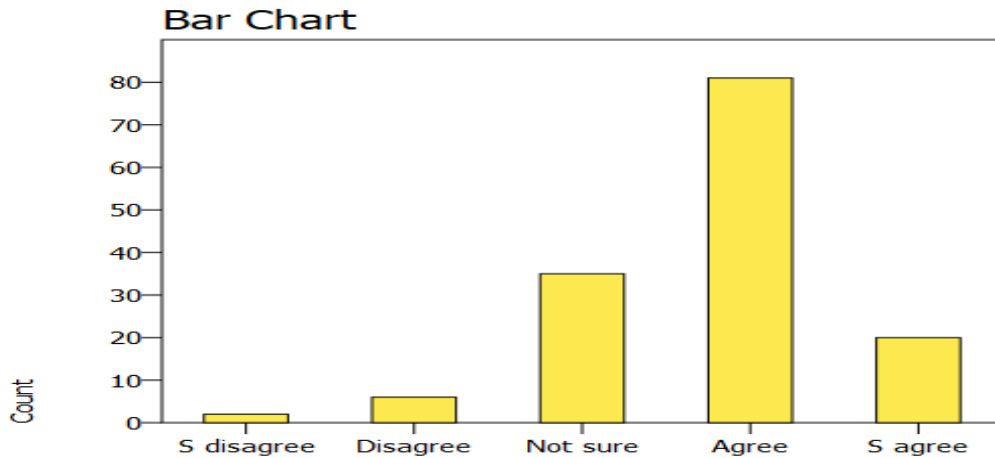
Question 8

Construction & development of northern rivers will benefit the people of J & K and will be supported by them.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 2 | 1.39 | 1.39 | 1.39 |
| Disagree | 2 | 6 | 4.17 | 4.17 | 5.56 |
| Not sure | 3 | 35 | 24.31 | 24.31 | 29.86 |
| Agree | 4 | 81 | 56.25 | 56.25 | 86.11 |
| S agree | 5 | 20 | 13.89 | 13.89 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

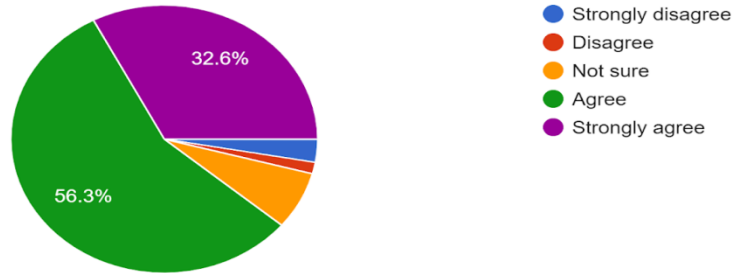


Analysis. The UT of J&K has suffered the most due to the incessant observations by Pakistan on the developmental works on the northern rivers. A major cross section (70%) feels that construction and developmental works on the northern rivers will benefit the people of J&K and will be supported by them.

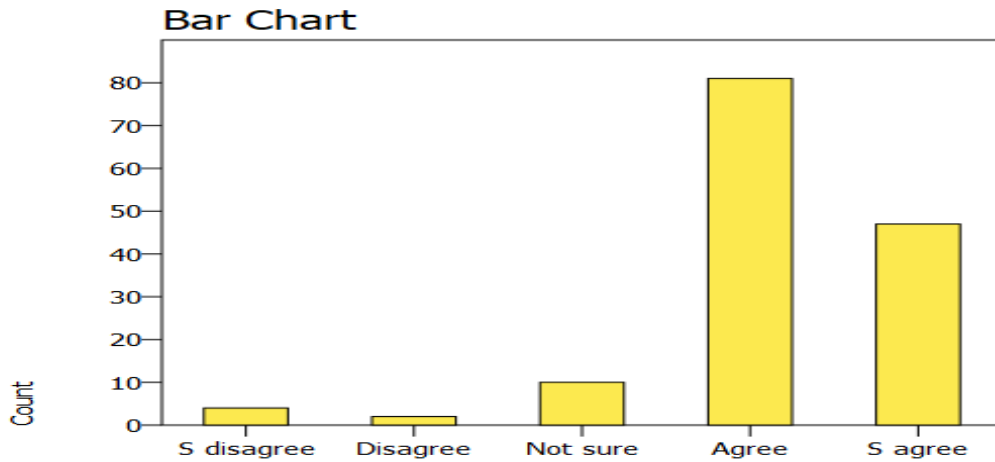
Question 9

Greater control of northern rivers by India will provide an effective tool for leveraging conflict resolution with Pakistan.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 4 | 2.78 | 2.78 | 2.78 |
| Disagree | 2 | 2 | 1.39 | 1.39 | 4.17 |
| Not sure | 3 | 10 | 6.94 | 6.94 | 11.11 |
| Agree | 4 | 81 | 56.25 | 56.25 | 67.36 |
| S agree | 5 | 47 | 32.64 | 32.64 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

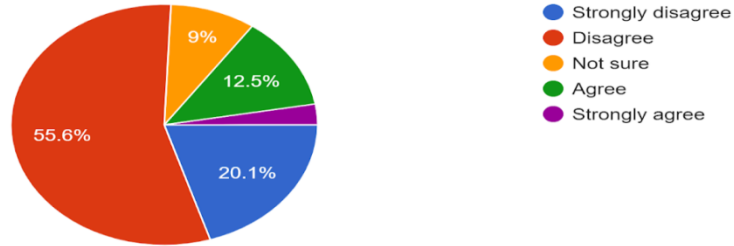


Analysis. Respondents were unanimous in their view (89%) that greater control of northern rivers by India will provide an effective tool for leveraging conflict resolution with Pakistan.

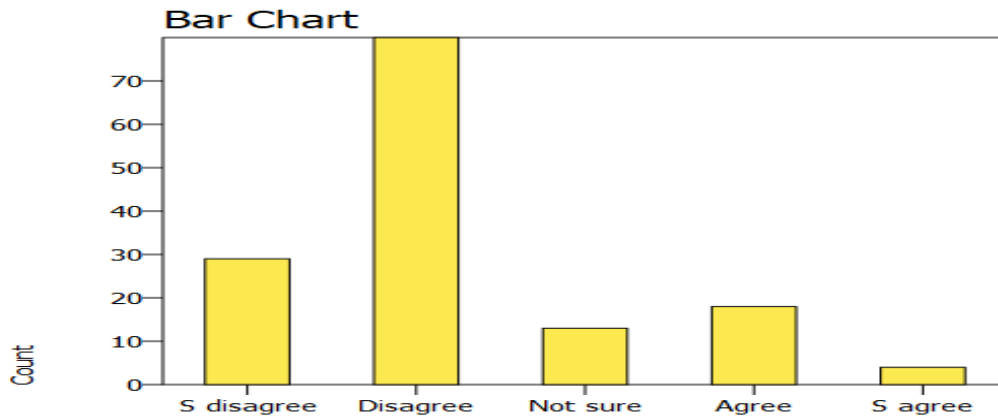
Question 10

India should not use water as a strategic deterrence against Pakistan as it would violate the IWT (IWT has withstood the test of time for past 60 years).

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 29 | 20.14 | 20.14 | 20.14 |
| Disagree | 2 | 80 | 55.56 | 55.56 | 75.69 |
| Not sure | 3 | 13 | 9.03 | 9.03 | 84.72 |
| Agree | 4 | 18 | 12.50 | 12.50 | 97.22 |
| S agree | 5 | 4 | 2.78 | 2.78 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

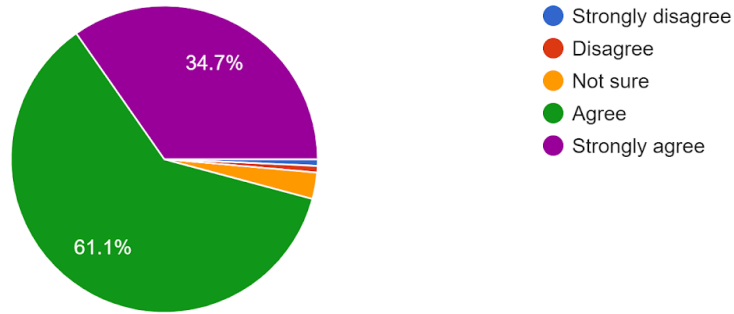


Analysis. 76% respondents disagreed to the idea that India should not use water as a strategic deterrence against Pakistan as it would violate the IWT just because IWT was a time tested Treaty in place for the last 60 yrs. Their view is in line with the changed socio economic scenario and continued efforts by Pakistan to destabilise India and transcends to the view that the Treaty should be abrogated or revisited, atleast.

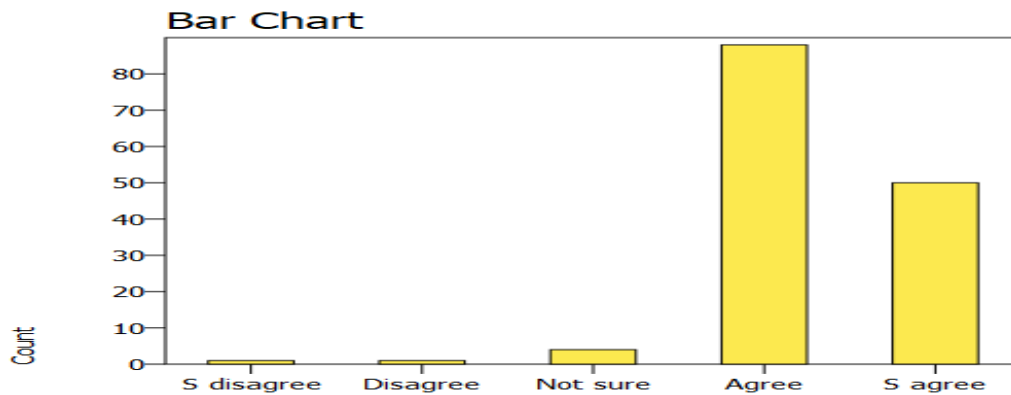
Question 11

Any construction of water control/ regulating structures over northern rivers will be strongly objected by Pakistan.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 1 | .69 | .69 | .69 |
| Disagree | 2 | 1 | .69 | .69 | 1.39 |
| Not sure | 3 | 4 | 2.78 | 2.78 | 4.17 |
| Agree | 4 | 88 | 61.11 | 61.11 | 65.28 |
| S agree | 5 | 50 | 34.72 | 34.72 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

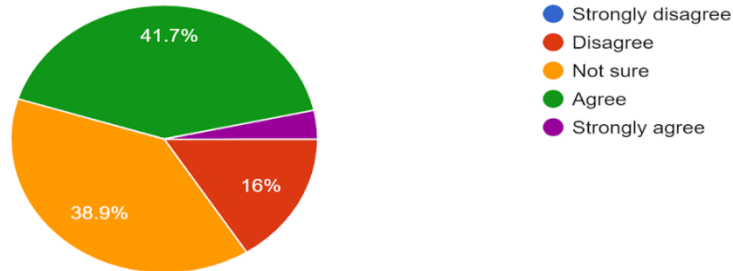


Analysis. A stark reality which has been vehemently reinforced by the respondents (96%) is that any construction of water control/ regulating structures over northern rivers will be strongly objected to by Pakistan.

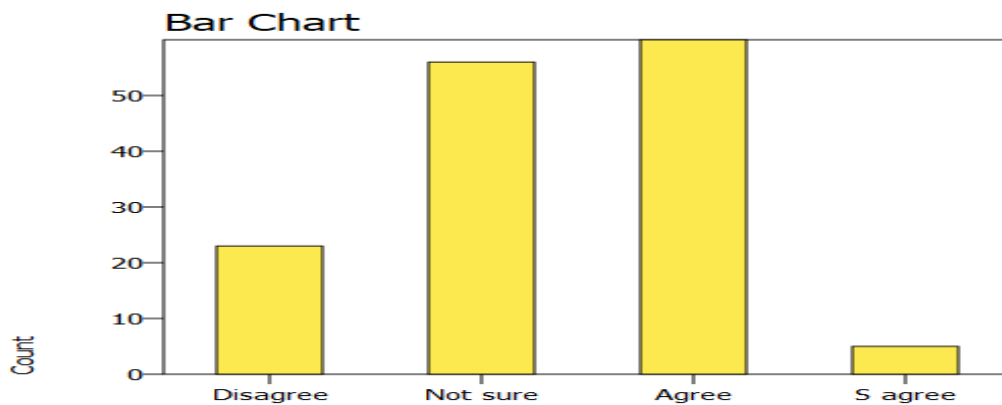
Question 12

Construction of water control/ regulating structures over northern rivers will be strongly objected by world community (less Pakistan) including World Bank, IMF and UN.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| Disagree | 2 | 23 | 15.97 | 15.97 | 15.97 |
| Not sure | 3 | 56 | 38.89 | 38.89 | 54.86 |
| Agree | 4 | 60 | 41.67 | 41.67 | 96.53 |
| S agree | 5 | 5 | 3.47 | 3.47 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

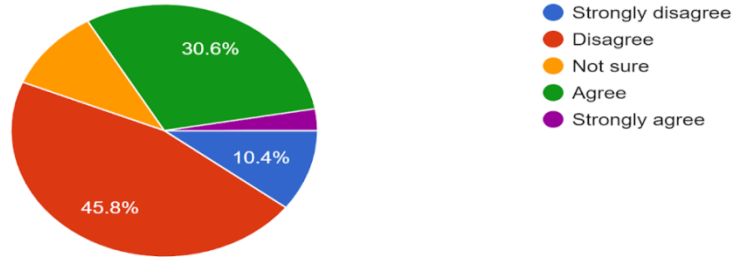


Analysis. While 45% of the respondents feel that any such action by India will be objected to, lesser numbers (16%) feel that it will not be so. A considerable size of respondents (39%) was not sure. The argument hinges on the logic that is presented to justify such construction and the narrative that is edified. Given the current standing of India as a dependable and mature growing leader vis-à-vis Pakistan, there is potential to tilt the decision in our favour.

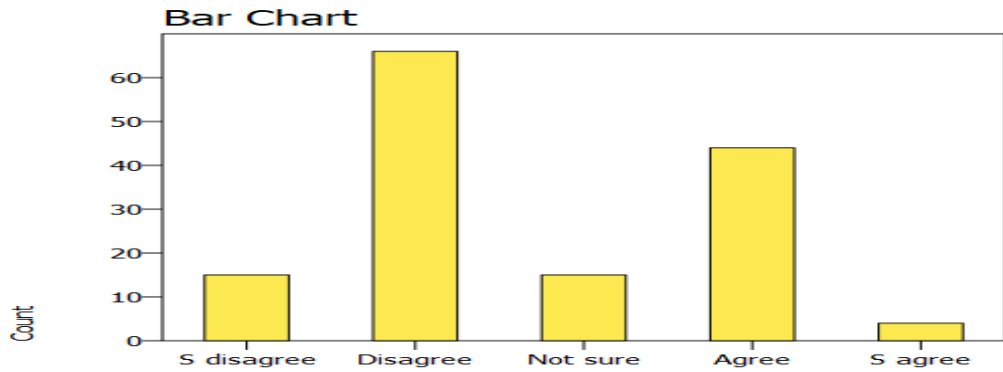
Question 13

India should not undertake offensive actions like starving/ flooding Pakistan employing its northern rivers as a Quid-pro-quo against Pakistan sponsore...gainst the tenets of humanity and just behaviour.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 15 | 10.42 | 10.42 | 10.42 |
| Disagree | 2 | 66 | 45.83 | 45.83 | 56.25 |
| Not sure | 3 | 15 | 10.42 | 10.42 | 66.67 |
| Agree | 4 | 44 | 30.56 | 30.56 | 97.22 |
| S agree | 5 | 4 | 2.78 | 2.78 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

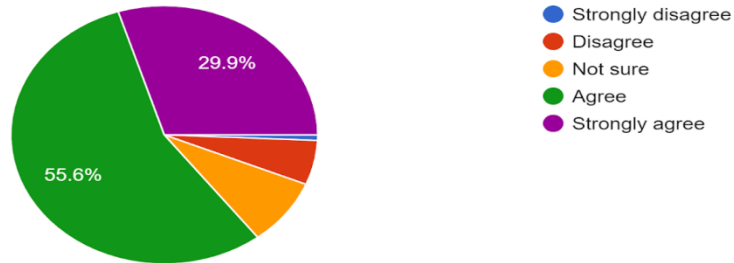


Analysis. It has been opined by the respondents (56%) that India should undertake offensive actions like starving/ flooding Pakistan employing its northern rivers as a quid-pro-quo against Pakistan sponsored anti India activities in its national interests.. Their logic being that even war, including proxy war is neither kind nor humane. Just and responsible reactions need to be reciprocated in equal measure.

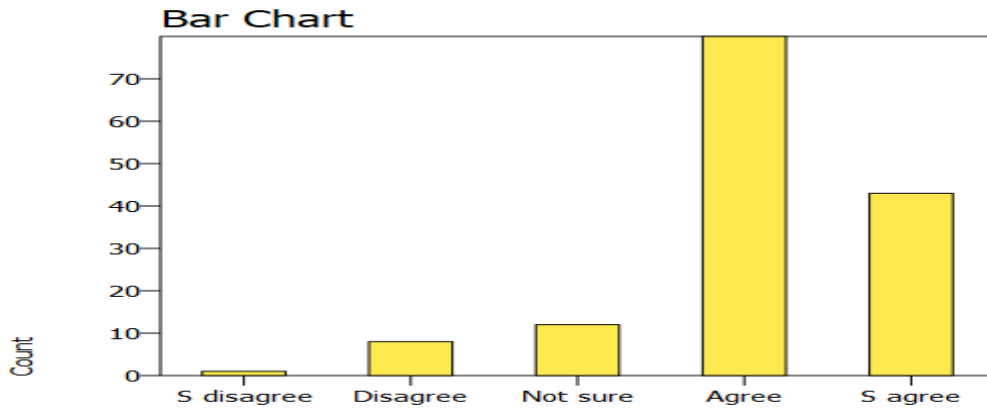
Question 14

There is a pressing need for India to build a strong counter narrative through diplomatic initiatives to re-negotiate the IWT.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 1 | .69 | .69 | .69 |
| Disagree | 2 | 8 | 5.56 | 5.56 | 6.25 |
| Not sure | 3 | 12 | 8.33 | 8.33 | 14.58 |
| Agree | 4 | 80 | 55.56 | 55.56 | 70.14 |
| S agree | 5 | 43 | 29.86 | 29.86 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

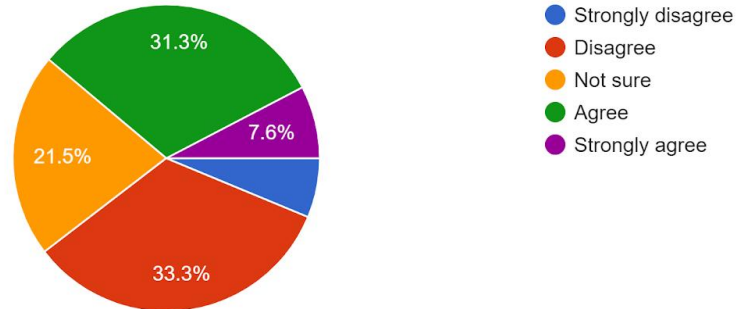


Analysis. The respondents strongly agreed (86%) in favour of the pressing need for India to build a strong counter narrative through diplomatic initiatives to re-negotiate the IWT Rather than unilaterally abrogating the IWT and getting viewed as a bully, there is a need to re-negotiate the IWT with balanced conditions and guidelines.

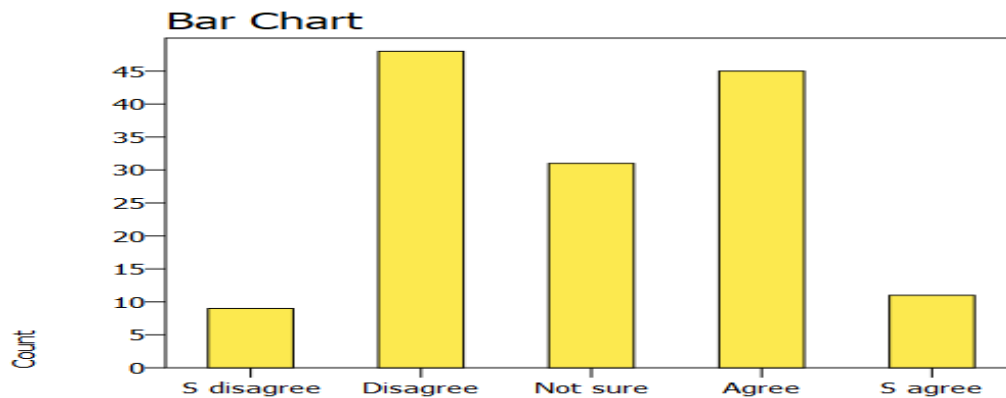
Question 15

India should unilaterally abrogate the IWT to safeguard its national interests.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 9 | 6.25 | 6.25 | 6.25 |
| Disagree | 2 | 48 | 33.33 | 33.33 | 39.58 |
| Not sure | 3 | 31 | 21.53 | 21.53 | 61.11 |
| Agree | 4 | 45 | 31.25 | 31.25 | 92.36 |
| S agree | 5 | 11 | 7.64 | 7.64 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

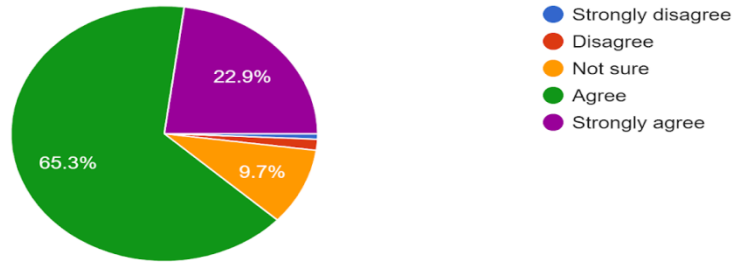


Analysis. The respondents were almost equally divided (39% each) on the issue. These equally divergent outlooks could be a result of section of balanced respondents seeking to take the world community on board before abrogation of IWT on one hand and the hardliners opting for unilateral abrogation regardless of world opinion on the other.

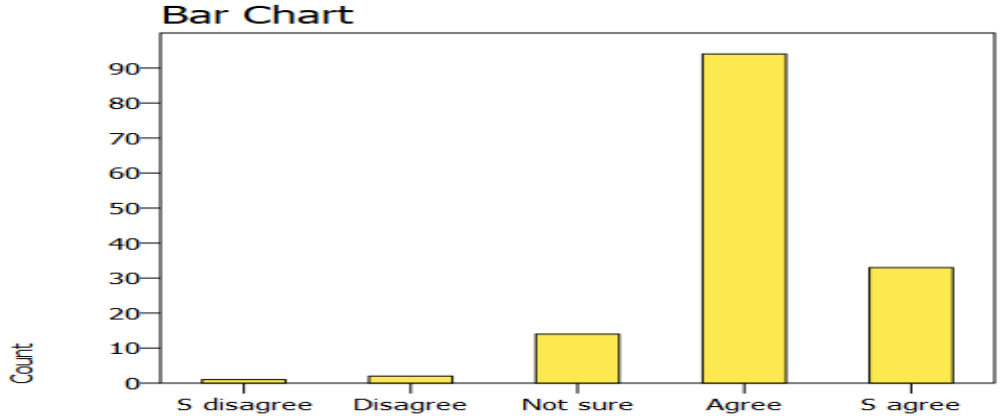
Question 16

India needs to highlight own criticality of water & losses to people of J & K due to unfavourable conditions of IWT for leveraging opi...ncluding World Bank and UN for renegotiating IWT.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| S disagree | 1 | 1 | .69 | .69 | .69 |
| Disagree | 2 | 2 | 1.39 | 1.39 | 2.08 |
| Not sure | 3 | 14 | 9.72 | 9.72 | 11.81 |
| Agree | 4 | 94 | 65.28 | 65.28 | 77.08 |
| S agree | 5 | 33 | 22.92 | 22.92 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |

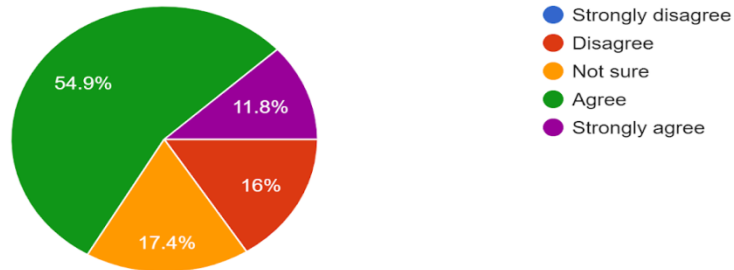


Analysis. An overwhelming majority of responses (88%) received was of the opinion that India needs to highlight own criticality of water and losses to people of J & K due to unfavourable conditions of IWT for leveraging opinion of the world community for re-negotiating IWT. A mere 2% of respondents were against the recommendation while 10% were not sure of the implications of the issue.

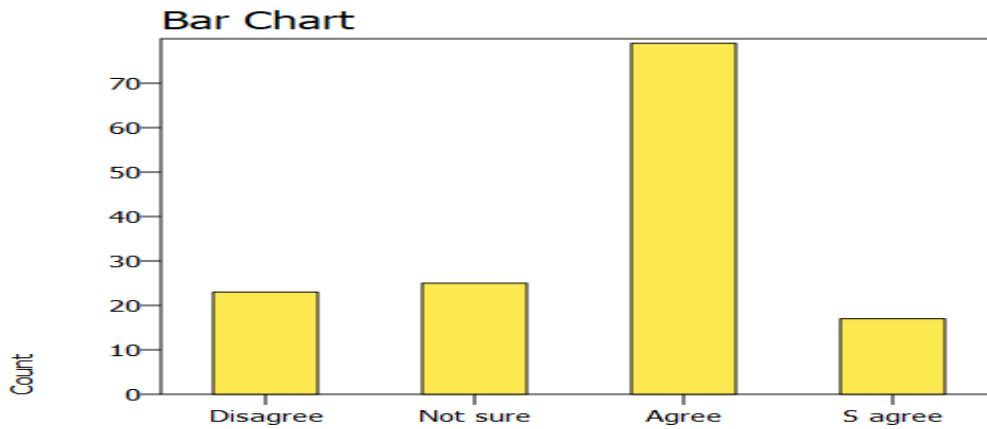
Question 17

Unilateral abrogation of the IWT by India will also affect its water sharing arrangements with other neighbours.

144 responses



| Value Label | Value | Frequency | Percent | Valid Percent | Cum Percent |
|-------------|-------|-----------|---------|---------------|-------------|
| Disagree | 2 | 23 | 15.97 | 15.97 | 15.97 |
| Not sure | 3 | 25 | 17.36 | 17.36 | 33.33 |
| Agree | 4 | 79 | 54.86 | 54.86 | 88.19 |
| S agree | 5 | 17 | 11.81 | 11.81 | 100.00 |
| Total | | 144 | 100.0 | 100.0 | |



Analysis. 67% of respondents felt that abrogation of the IWT by India will also affect its water sharing arrangements with other neighbours thereby necessitating a suitable political climate of trust and confidence building measures to be put in place with balance neighbours before or simultaneous to the abrogation of IWT with Pakistan.