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Indus Water Treaty- A Problem in the Utilization of Hydro-Power Resources of J & K.

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Abstract: *Hydropower is one of the State's key resources and J&K intends to accelerate harnessing this potential as an integral part of its economic development. The development of hydro potential in the State is expected to usher in huge economic benefits in the form of infrastructure development, industrialization and employment generation. With increase in hydropower generation & improvement in efficiencies in transmission and distribution of electricity, J&K aims not only to provide energy at affordable cost for eco-friendly industrial development but also turn into a net energy exporter. J&K is one of the states of India which is having tremendous hydro-power potential. But one of the major constraints in tapping hydro-power in the state besides shortage of resources is the "Indus Water Treaty". The Treaty lays restrictions on storage of water on major rivers of J&K thus restricting the scope of hydro-power generation. This treaty prohibits reservoir storage of water on the major rivers of J&K restricting the scope of generating electricity from hydro power to generation from only run off the river projects. The state is facing acute scarcity of power, which can be gauged from the fact that against a total peak requirement of about 20,000 MW, the State has been able to develop only 1474.65 MW till date. 8. According to the available data there are about 2000 un-electrified villages/hamlets in the state. So there is need for development of hydroelectric power on a scale serving a small community.*

Keywords: *Hydro-Power, Industrialization, Indus Water Treaty, Potential, Resources.*

I. Introduction

The Jammu & Kashmir (J&K) is the northernmost state of the Union of India, situated at a latitude of $34^0.05$ N and longitude of $74^0.05$ E. It comprises three distinct regions of Jammu, Kashmir and Ladakh which are diverse in culture, geography and climate. The Jammu region is topographically plain and experiences sub-tropical climate. On the other hand the valley of Kashmir experiences temperate climate. Ladakh in contrast to both Jammu & Kashmir regions is mountainous with scant vegetation and experiences cold and arid climate. The state consists of twenty two administrative districts and its population has touched ten million mark lately. J&K is one of the energy starved states of the country despite having tremendous hydro-power potential. One of the major constraints in tapping hydro-power in the state besides shortage of resources is the "Indus Water Treaty", to which both India and Pakistan are signatories. The Treaty prohibits reservoir storage of water on major rivers of J&K restricting the scope of generating electricity from hydro power to generation from only run off the river projects. The topography of the state (Jammu being the only rail link) together with remote & far-flung villages across the landscape compounds the energy crises. Transmission of power to these areas is not only un-economical but difficult as well. Worse still is the population density in some villages, where households are interspersed and habitations dispersed. In such geographical locations, electrification by laying long Transmission & Distribution lines becomes practically impossible.[i]

Even before the partition of India and Pakistan, the Indus posed problems between the states of British India. The problem became international only after partition, though, and the attendant increased hostility and lack of supra-legal authority only exacerbated the issue. Pakistani territory, which had relied on Indus water for centuries, now found the water sources originating in another country, one with whom geopolitical relations were increasing in hostility.[ii]

Arising from the Tibetan Plateau in western China, the Indus River travels northwest through the Himalayan valleys and after crossing into the Kashmir region and traversing Pakistan, flows out into the Arabian Sea. The principal rivers of the Indus system are snow-fed and their flow varies seasonally and spatially. Most of the Indus Basin lies in India and Pakistan, and only about 13 per cent of its total catchment in Afghanistan and in China's autonomous region of Tibet.[iii]

The Indus Waters Treaty, brokered by the World Bank in 1960, divides the Indus Basin system between India and Pakistan by allocating three eastern rivers of the basin, namely the Ravi, Beas and Sutlej to India and the three western rivers — the Indus, Chenab and Jhelum — to Pakistan. The Treaty obliges both India and Pakistan to not interfere in the waters of the rivers allocated to the other side except for the limit

specified for Agricultural Use, Domestic Use and Non-Consumptive Use. India was also given the right to generate hydroelectricity on waters of the western rivers through run-of-the river projects, i.e. without altering the flow of water. The same right has, however, not been given to Pakistan on the eastern rivers.[iv]

Statistics for the Indus Basin India		**Pakistan**
Length	1,114 km	1, 708 miles
Basin area	321289 sq. km	252,638 miles^2
Average annual flow	73.31 BCM	173.63 BCM
Live storage capacity	6.57 BCM	15 MAF
Utilizable surface water	46.0 BCM	—
Basin Population in 2010	58.42 million	172 million
Per capita availability of water 2010	1255 CM	1038 CM

Table 1 Statistics for the Indus Basin

Sources (India): Central Water Commission, 2010

The Indus Water Treaty (IWT) was signed in Karachi on September 19, 1960 and government ratifications were exchanged in Delhi in January 1961. The Indus System of Rivers comprises three Western Rivers the Indus, the Jhelum and Chenab and three Eastern Rivers - the Sutlej, the Beas and the Ravi; and with minor exceptions, the treaty gives India exclusive use of all of the waters of the Eastern Rivers and their tributaries before the point where the rivers enter Pakistan. Similarly, Pakistan has exclusive use of the Western Rivers. Pakistan also received one-time financial compensation for the loss of water from the Eastern Rivers. Since then the Indus basin of Pakistan has been serving as a premier laboratory for water resources research and management during the second half of the 20th century but the scope of J&K over western rivers is guided by IWT. At the time of the signing of IWT nobody has taken care of this forgotten disputed land and people. Subsequently the State of Jammu and Kashmir, which is mainly effected at the benefits of the two countries, could utilize through residual benefits of its resources to the optimum and deficits caused by the two agreeing parties. The IWT was a first bilateral approached to begin the relation between two countries. Though IWT was cordially welcomed in both countries and also protected all water rights of both parties. Subsequently the Pakistan has built Mangla and Tarbela dams and several storage facilities on Indus, Jhelum and Chenab rivers and India also has built various Dams and Barrages on Sutlej, Beas and Ravi Rivers. It is unfortunate that Srinagar, Muzaffarabad and Gilgit governments have failed to defend the manner and extent to which the people of Jammu and Kashmir are entitled to have a role in the use of their water resources at Mangla (Pakistan administrative Kashmir), Salal, Dulhasti, Uri, (Indian administrative Kashmir) and Diamir Basha Dam in Gilgit (Pakistan has illegally made his province). Yet, India and Pakistan are not acceding to the water and electricity requirements in both sides of Kashmir. Also both countries are never talking about the helpless people of Kashmir and their legitimate rights of water from their own rivers. [v]

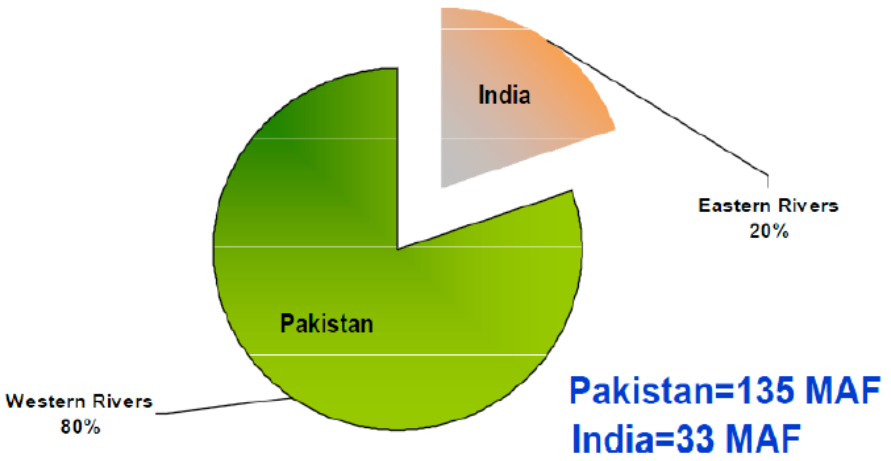

Figure 1: Pie Chart shows the water share between India and Pakistan after IWT
Source: http://www.lead.org.pk/jw/reading_material_journalist_workshop.htm

The Jhelum, Chenab and Indus Rivers all flow through Jammu and Kashmir, yet under the IWT the state must seek permission from Indus water commissioners before any economical development.
The treaty which was carried out in the best interest of both nations has, however, deprived the Jammu and Kashmir state to use its own water resources and thereby severely affected the developmental process of the

state. Conforming to the treaty criteria, State cannot fully exploit the water potentialities of the Indus, Jhelum and Chenab rivers.

II. Methodology

The study is totally worked out on the secondary data. The sources of the data like books, journals, magazines, reports and newspapers were mainly used. But the preferences were given to the authentic and recent reports prepared by the state government.

III. Results And Discussions

Jammu and Kashmir's main rivers namely the Chenab, the Ravi, the Jhelum and the Indus have the potential to generate more than 20,000 MW of power. However, not even 10% of this renewable source of energy of Chenab has been exploited till date. Out of 1869 MW of hydro power harnessed in the state only 309 MW have so far been developed in the state sector and 1560 MW have been developed under central sector.

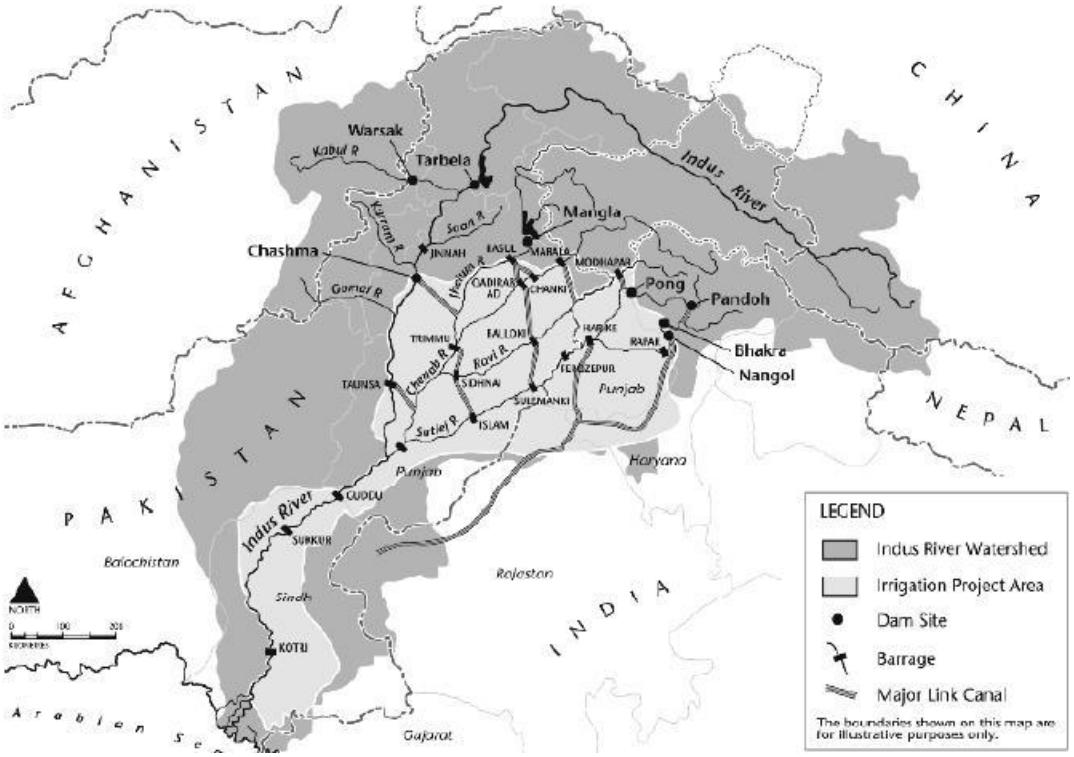

Fig.2 Map showing Indus River & its Basin

Source: http://www.lead.org.pk/jw/reading_material_journalist_workshop.htm

Currently, a total capacity of about 1465 MW is available to the state from various sources including power from states' own generating facilities, allocation from central power utilities and joint ventures, which is at least 460 MW short of the total requirement of the state. The generation level is further diminished during winters because of the low water level in the rivers. The state has to hence rely heavily on purchases from other states' plants to meet its demand. Despite large purchases from the central plants and other states, it is unable to meet its peak demand and has to curtail power supply for long hours in summers as well as winters. The state's low generation as well as lack of purchasing power is often cited as the reasons for curtailment. To meet its essential requirements the state of J&K has been purchasing power from outside state sources and the average purchase has been about INR 1500 Crore per year in the last five years, which comes to be about 30 % of the state budget. In other words, one third of the budget goes into purchase of power which otherwise would have facilitated sustainable development of the infrastructure sector, manufacturing sector and other allied sectors which has badly been affected due to turmoil in the state of J&K and justifying their complete rejuvenation.[vi]

Though the J&K State has estimated the total Hydel power potential of the State at 20,000 MWs, of which 16480 MWs have been identified. The harnessed hydro-electricity potential constitutes just 7.5 percent of the assessed potential, with 92.5 percent remaining unharnessed. The state has only managed around 2500 MW because the treaty disallows the J&K state to construction of storage reservoirs on three western rivers except

run-of-river projects. There are also further restrictions on the water storage level. However total assessed power potential is on the basis or "run-of-river" schemes with some small live storage capacity in the upper reaches of the three western rivers. This type of projects not only raises the construction cost of the projects but also affects adversely the cost-effectiveness of power generation from these projects but also generation capacity is very low. Cost of run-of-the-river projects using small head fall is reported to be about 75 per cent higher than hydel projects using high head fall. These high cost hydel projects generate electricity much below their installed capacity. For instance, run-of-the-river Uri Hydel Project built at a cost of more than US $ 800 million has been producing maximum of only 200 MW in winter as against the 480 MW installed capacity. In addition to this the former Managing Director of J&K PDC Javid Shahmiri has stated that "considering that the hydro potential of the State is about 20,000 MW, annual energy loss works out to 60,000 million units valuing Rs. 12,000 Crores at Rs. 2.00 per unit per year, which is substantially less than the prevalent market rate".

Chenab River is leading source of power potential (as shown in figure 2) of J&K state but there is no effective storage on main Chenab up to Kishtwar. Also there is no live storage on Salal project and only weekly storage at Baglihar 0.3MAF, Dulhasti 0.007 MAF and storage of 1.1MAF is proposed Bursar tributary of Chenab .Thus J&K state is able to identify only 16480 MWs and out of the identified potential, only 2500 MWs have been harnessed, consisting of 758.70 MWs of J&K State Sector from 20 power projects, 1680 MWs from three power projects under Central Sector i.e. 690 MWs from Salal Hydel Electric Project, 480 MWs from Uri-I Hydel Electric Project, from Dulhasti 390 MWs and 17.50 MWs from two private sector projects. Fig. 1 depicts the identified harnessed and under construction power potential by j & K and central Government.

S.No	Basin	Hydro-power potential	
		Identified (MW)	Developed (MW)
1.	Jehlum	3560	732.6
2.	Chenab	10360	724.5
3.	Indus	2060	8.55
4.	Ravi	220	9.00
Total		**16200**	**1474.65**

Table.2 Potential of hydro- power in the J&K state.

The analysis of table 2 shows that JKPDC and NHPC collectively generating 16200 MWs hydro potential on three western rivers from Jhelum, Chenab, Indus and Ravi also. It is revealed from the above analysis that the actual power potential of Jhelum, Chenab, Indus and Ravi are 3560, 10360, 2060 and 50 respectively. The harnessed potential of these river basins are 750.1MWs, 1563.8MWs, 13.3MWs, and 129 MWs respectively. The table further shows 570 MWs on Jhelum, 450 MWs on Chenab, and 90.26 MWs on Indus are under construction. Thus the analysis depicts that Chenab River has the highest power potential but less than 15.09 percent of it has been harnessed. Similarly only 0.0064 percent of Indus River and 21.07 percent of Jhelum River has been harnessed.

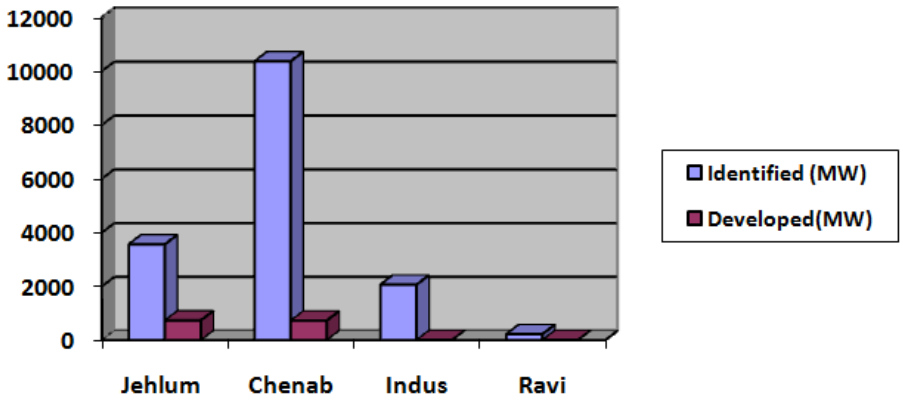

Fig.3 Potential of hydro- power in the J&K state.

Moreover, the main power generating projects Salal, Baglihar, Tulbul and Kishanganga are in the state have become controversial due to the Pakistan's objection (as a violation of IWT). The projects end up having long gestation periods and short working lifespan. Abrogating the Indus Waters Treaty would provide greater benefits and open up several avenues for unrestrained development of the state of Jammu & Kashmir. It can:

- Improve hydro-electricity sector's potential as storage facilities could be developed
- Pave the way for industrialization of the state

- Improve irrigation facilities which in turn would boost agricultural growth
- Give rise to employment opportunities, which will indirectly keep a check on external interference in state affairs
- Help attract private investments, propelling the state's position on India's investment map

While there is some progress in power generating sector, but shortage of power continues to haunt the State and is becoming major constraint for the development of inhibiting the growth of industry, agriculture and tourism sector as well. During the past forty years, since the Indus Treaty was signed, there has been sizeable increase in the State's population also the standards and life style of living have changed. Simultaneously, the State has witnessed a big leap in demand for electricity.

Moreover the shortage of power in the state has not only been causing problems for domestic consumption, As such there have been fundamental changes in the ground situation, so far as the actual power requirement of the State for domestic, agricultural and industrial uses, is concerned. The greatest weakness is on the distribution front which comes under the domain of the State. Aggregate Technical and Commercial (AT&C) losses of State is about 72 percent and this had made the PDD financially sick. In this context the State is also unable to invest adequately in additional generation capacity as the State Power Department is running in huge losses. Over the course of five decades, some have suggested that the loss to the state in terms of development of industry, power and agriculture could be nearly US$ 4.5 billion. This loss of development is a fundamental question. If the entire power potential of the state is to be utilized, the power generation can be run as an industry on commercial lines and state can supply surplus power to the entire region. Apart from IWT climate is another factor which is hampering the state's power potential. Being a mountainous states; majority of rivers water are snow fed, the water discharge in different rivers gets depleted in winter months from September to February. Thus the installed power generation capacity goes down from 25 percent to 30 percent and state is obliged to run high cost gas based generation and imports power from central government, northern grid.[vii]

To meet the growing demand of power the state has planned to achieve 6000 MWs electricity within next five years, to boost the industrial sector of the state. But keep in mind presently the J&K and central government collectively generating 2500 MWs on western rivers. Some power projects which are already objected from Pakistan (as the violation of IWT). Nowadays Pakistan is facing serious water and energy crisis which are directly link with Indus Water Treaty. If J&K will try to build more power projects or exploit more water from western rivers, what would be the reaction of water stressed Pakistan? The result may be armed conflict between India and Pakistan. Before turning into conflict both countries again revisit the existed agreement.

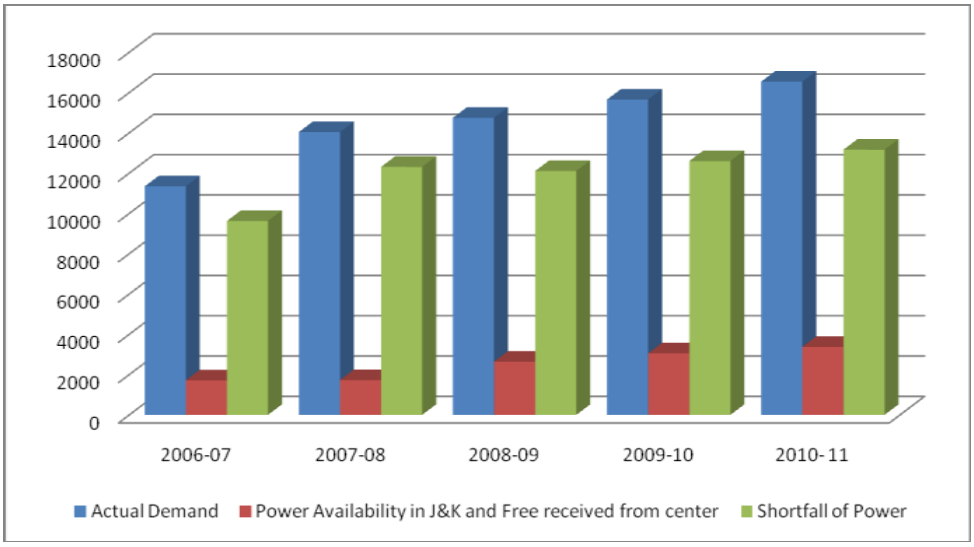

Fig. 4: Jammu & Kashmir's Energy Shortfalls (MUs).
Source: Economic Survey of J&K 2011-12

At other side J&K experienced increasing electricity shortages in terms of peak demand each year from 2000 to halfway through 2003, resulting in electricity shortages of between (11 and 16 percent and J&K's power generating capacity of 940 MW is far short of the 1169 MW peak demand in 2002–2003. Moreover it is estimated that the state's power demand is likely to be increase 2,600 MW in 2012–13 and 5,500 MW by 2025–26.

The energy shortfall in various years in J&K state is shown in figure 2. The figure shows that from 2006-07 to 2010-11the actual demand has increased from 11343 MUs to 16544 MUs respectively. The power availability from J&K PDC and free received from NHPC has increased from 1717.64 MUs to 3379.692 MUs over the years. Furthermore the power shortfall has also been increased at an alarming rate. It means both the market forces are growing at an increasing rate, resulting the continuous positive gap between the two.[viii]

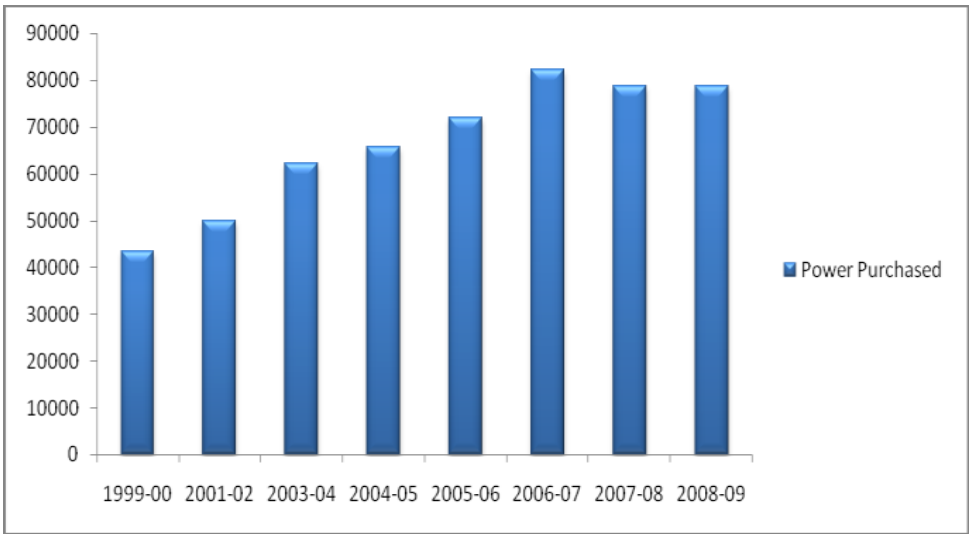

Fig. 5: Power Purchased from Outside of the State.
Source: J&K Digest of Statistic 2008-09.

As there is an increasing demand for power in J&K state. The state has purchased power rest of the state especially from northern grid of central government. The power purchased from outside of the state by J&K state in various years is shown in figure 3. The figure shows that except in 2007-08 there was continuous increased in the power purchased from 1999-00t0 2008-09 and it has almost doubled over the years. It means that J&K has to pay a huge amount for power purchasing from other state. Has the state been allowed to utilize its water resources freely, the state could have been able to produce the increased amount of electricity within the state and the huge amount of money which it has to pay for purchasing the power outside the state could have been invested for other developmental purposes resulting in overall growth of the J&K state economy. Also because of its abundant water resources it could have been able to generate surplus electricity which it can export to neighboring states, resulting additional revenue to the state.

The growth in power demand inadequate capacity addition has resulted in power shortages which are affecting all the economic sectors. Furthermore a theses power shortage is becoming a source of conflict and instability especially during winter season in the state. It is easy to understand in 2012 January, when a young man has lost his life and two others injured when CISF personnel opened fire on Monday to disperse the protesters agitated over power shortage in Boniyar area of Baramulla district in the Kashmir Valley. Therefore, the core of the Kashmiri discourse on the shortage of power is the distribution of water resources that was agreed to between India and Pakistan through the instrumentality of the Indus Water Treaty (1960).[ix]

Albeit, three main river basins of the state include Indus and its tributaries, Jhelum and its tributaries, Chenab and its tributaries offer great scope for generation of power through Hydro electric plant. Since power and water has become an intensive need for industrialization and hence development, if some kind of raw material is available for exploitation, it should to be utilized fully. Then optimal exploitation of the available resources of the State would meet the State's demand and also will boost the overall economy of the state. Also estimated power potential of the state is helpful to bring peace and stability in the ongoing crisis in J&K State. As 2002 report "Reshaping the Agenda in Kashmir" by Waslekar comments that the disputed territory's potential could help to transform it "from a valley of death and destruction to a center of excellence in…engineering.

IV. Conclusion

The J&K State is an economically backward state and primarily because of power shortage is lacking an industrial base. Despite tremendous hydro power potential the state has been reeling under power crisis for a number of reasons. The geoclimatic conditions coupled with the political scenario has taken a heavy toll of the development of the State. It is in this background the State Govt has come up with a power policy which envisages privatization of potential hydro power sites for development through IPPs. The state of J&K is

economically backward due to power crisis under which it has been reeling for the last few decades and therefore lacks an industrial base. Where the J&K state has 20000 MWs hydro it could have been only able to harnessed 10 percent of total because of IWT. All this harnessed power potential is based on run-of-the rivers project, which cannot produce optimum generation. Also this type of projects cannot meet the growing power demand of the state, which results into shortage of power. Thus the state is enforced to purchase power continuously from outside the state resulting outflow of money to dependent states which not only creates serious threat on J&K state's industrial sector but also overall growth and development of the J & K state economy. Therefore it is necessary for New Delhi and Islamabad to relook the Indus water treaty with due considerations of the J&K state and permit utilize its water resources as per the requirements.

References

[1]. [i] Shafat Sultan, Development Of Small Hydro Power In Jammu And Kashmir (India) Jammu & Kashmir Energy Development Agency (Jakeda), Jammu-180001, J&K, India (2009).

[2]. [ii] Govt. Of J&K, J&K State Hydro-Electric Development Policy 2011.Jammu And Kashmir Power Development Department, 2011.

[3]. [iii] "History Of Multipurpose River Valley Project Development In Indus Basin", Bhakra Beas Management Board, Government Of India. <Http://Bbmb.Gov.In/English/Menu2.Asp>, (Accessed 30 June 2012).

[4]. [iv] "Annexure B And Annexure C", Indus Waters Treaty, World Bank. <Http://Siteresources.Worldbank.Org/Intsouthasia/Resources/223497-105737253588/Induswaters

[5]. Treaty1960.Pdf>, (Accessed 7 July 2012).

[6]. [v] Miner M Et Al. Water Sharing Between India And Pakistan: A Critical Evaluation Of The Indus Water Treaty, Journal Of Water International Vol. 34, No. 2, June, (2009).

[7]. [vi] Shahmiri J. Indus Water Treaty J&K Perspective, (This Speech Is Delivered In New Delhi On India-Pakistan Water Dialogue) Published By Greater Kashmir Srinagar, (2010).

[8]. [vii] Mohammad D, Bhat As. Problems Of Power Sector Development. In Shri Prakash And G.M. Shah, Eds., Towards Understanding The Kashmir Crisis, Delhi, (2002).

[9]. [viii] Bukhari S. "Serious Power Shortage Stalks J&K", The Hindu, 18, January (2000).

[10]. ix Ali N. J&K Vis New Delhi, At Http//Www.Himalmag.Com/Component/.../4560-J-A-K-Vs-New-Delhi-.Html (2011).