



Research Paper

## Irrigation System in Kashmir: Ecological, Political and Societal Dynamics (1950-1990)

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**Abstract:**

*This research paper meticulously examines the hurdles impeding the progress of irrigation in Kashmir since 1947, despite substantial state investments in establishing a robust infrastructure. By drawing on both historical and contemporary data, the paper explores the multifaceted challenges that have thwarted the anticipated gains from significant state investments in irrigation projects. In addition to bureaucratic inefficiencies and inadequate maintenance practices, the analysis considers challenges such as encroachment, water politics, and other socio-political dynamics, comprehensively understanding their collective impact on the overall success of irrigation initiatives.*

**Keywords:** Kashmir, encroachment, water politics, peasant participation.

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### I. Introduction:

Since the year 1947, irrigation has witnessed commendable progress in Kashmir, emerging as a pivotal component of the state's agricultural development strategy. Notably, investments in irrigation have constituted the single largest share of agricultural investment<sup>1</sup>, contributing to an expansion of the irrigated area across the state, albeit with discernible inter-district variations.<sup>2</sup> Despite these strides, the state was short of achieving its agricultural development objectives. The primary challenge laid in the inadequate water supply to the Kandi regions, where a substantial portion of land remained uncultivated. Moreover, the sustained realization that the net sown area and crop production remain unchanged over the years underscores the persistence of a fundamental issue – the drying up or underutilization of irrigation sources due to human intervention.<sup>3</sup> Over the years as agriculture took a commercial turn and acreages under paddy cultivation decreased and apple orchards became a prominent feature of the cropping pattern, the dependence on irrigation considerably declined making it easy for people to effect encroachments. Moreover, the shift in cropping pattern also resulted in diminishing peasant participation in carrying out repairs and maintenance of the canals. In places where irrigation continued to hold unchallenged significance and subsistence cropping continued, the challenges of water logging, salinity became more apparent. The delay in completion of irrigation projects, inability to make investments for irrigation development because of some treaty obligations further impeded the development and extension of irrigation infrastructure in Kashmir.

### I. Encroachments and Diminishing Peasant Participation

Increasing encroachment of Government Canals and *Zamindari Kuhl*s was one of the most critical issues faced by Kashmir Irrigation system since 1947. Due to encroachments, the canals lost their capacity to carry adequate quantities of water and this severely affected their Cultural Command Area (CCA) and also caused inundation of crop field even during the otherwise manageable rainy season.<sup>4</sup> Owing to encroachment whereas in the *Sar-i-ab* villages (Head Villages) water would flow over embankment tops, the *pa-i-ab*

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<sup>1</sup> *Encyclopedia of India (Jammu and Kashmir) Vol. IX (part II) Kashmir* by F.M Husain, (New Delhi, Rima Publishing House, 1992), pp.185-90.

<sup>2</sup> *Encyclopedia of India (Jammu and Kashmir) Vol. IX (part II) Kashmir* by F.M Husain, (New Delhi, Rima Publishing House, 1992), pp.185-90.

<sup>3</sup> *Encyclopedia of Kashmir, Series-9, Kashmir Society and Culture*, Edited by Suresh Kumar Sharma & S. R. Bakshi, (New Delhi, Anmol Publications, Pvt. Ltd.) 1995.

<sup>4</sup> The above information is based on the deliberation between the researcher and Nazir Ahmad Khan, a cultivator of Tujar Sharif Sopore J& K on 24<sup>th</sup> of July 2019

(Tail Villages) received insufficient quantity of water for cultivation.<sup>5</sup> It is pertinent to mention here that although encroachment problem prevailed across the different regions of the valley but its nature and causes varied from canal to canal. In case of some canals encroachment began as a result of the failure of the state and the society to carryout timely repairs and desilting procedures thereby leading overflow and seepage.<sup>6</sup> In order to safeguard their fields the peasants planted trees on the banks of the canals which later on outgrew to the main canal and blocked the passage of water.<sup>7</sup> However, what apparently started as a measure to safeguard the fields against soil erosion and silting later on became an economically motivated practice for the peasant; through encroachment the peasants increased land under their command.

Encroachment of the canals became more rampant after agriculture took commercial turn in late 1970's. The increasing conversion of paddy lands into orchards<sup>8</sup> considerably decreased the demand of water for irrigation purposes<sup>9</sup> leading to abrupt decline in the significance of canals. This resulted in the negligence of the irrigation developmental activities both by the state as well as the society and left ample scope to the peasants for making encroachments.<sup>10</sup> The decreased dependence of people on canals for drinking water and other domestic purposes further increased their vulnerability to encroachments. Field survey and oral histories of the canal benefited areas revealed that encroachment was a very complex phenomenon and any generalization of its causes would be risky. Nazir Ahmad Khan resident of *Tujar Sharief* Sopore while discussing the encroachment of Lal Kuhl underlined: "earlier the peasants of the village used to cultivate paddy on the waters of *Lal Kuhl*, but from last couple of years because of encroachment, the discharge of the *kuhl* has receded to such an extent that the paddy crop perishes in the midway. This is the appropriate time to take some strict measures in the right direction before it is too late to save the irrigation system of the valley".<sup>11</sup> About the encroachment to *Dadi Canal* Ghulam Nabi Bhat, a farmer of *Marhama* Anantnag revealed that massive encroachments occurred to the canal during the last couple of decades because of multiple reasons viz. peasant greed, inaction on part of state and indifferent attitude of the society at large. While explaining the causes of encroachment to *Bumteng* Minor (tributary of Dadi Canal) he underlined "in the absence of strict vigil the peasants who had received compensation for the lands that came under the construction of the canal later on planted willow and poplar trees on the same land. Thus, from the initial width of around 80 feet the canal was reduced to 4-5 feet only.<sup>12</sup> Such case of canal encroachment was not an exception but had become a norm and of late construction activities were carried out on the lands which on revenue papers actually belonged to the canal".<sup>13</sup> In other parts of the valley the peasants narrated similar stories of encroachment albeit holding the state and administrative machinery more responsible than the society.

In order to prevent the encroachments, the negative ramifications of which had become clearly visible, certain legalistic measures were taken by the state. The Jammu and Kashmir State Irrigation Act passed in 1978 made encroachment a punishable offense. According to the Act 'whosoever damages, alters, enlarges or encroaches upon any irrigation work shall be liable on conviction before a Judicial Magistrate for the offence of encroachment'.<sup>14</sup> Moreover, powers were also given to officers on the ground to remove encroachments.<sup>15</sup> However, despite laws and law enforcing agencies the State Irrigation Department failed miserably to stop the encroachment of canals and *Zamindari kuhl*s. Demolition of illegal plantation and structures by the Department on the embankments of canals proved ineffective as the will behind demolition

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<sup>5</sup> Ibid.

<sup>6</sup> For more details see *Irrigation Commission Report*, (New Delhi, Ministry of Irrigation and Power, 1972, p. 40

<sup>7</sup> Ibid.

<sup>8</sup> Between 1951-52 and 1985-86 the acreage under orchards increased from 31000 acres to 1.48 lakh hectares. For details see M. S. Bhat M. L Misri, *Poverty planning and Economic Change in Jammu and Kashmir*, (New Delhi Vikas Publishing House, 1994)

<sup>9</sup> Contrary to paddy cultivation which required abundant and assured doses of irrigation the horticultural lands especially apple orchards required only one or two doses of flood irrigation in the whole year leading to considerable decline in the demand of water for irrigation purposes.

<sup>10</sup> The above information is based on a deliberation between the researcher and Ghulam Nabi Wani, Ex-Canal Daroga, Irrigation Department Jammu and Kashmir on 21<sup>st</sup> of January 2016

<sup>11</sup> The information is based on a conversation between the researcher and Nazir Ahmad Khan, a cultivator of Tujar Spore J& K on 15<sup>th</sup> Jan. 2015

<sup>12</sup> The above information is based on a discussion between the researcher and Ghulam Nabi Bhat, a Peasant of *Marhama* Anantnag on 8<sup>th</sup> of Feb. 2016

<sup>13</sup> Ibid.

<sup>14</sup> *Jammu wa Kashmir ka Abpashi Act (in Urdu)*, 1978, (Srinagar, Department of Irrigation and Flood Control, Government of Jammu and Kashmir, 1979.

<sup>15</sup> Ibid.

was halfhearted.<sup>16</sup> The encroachers lost no time in reconstructing their razed structures as soon as the demolition squad was out of sight. The problem of encroachment further accentuated during 1990's when insurgency was at its peak and the state machinery was busy with counter insurgency operations. It was during this period the canals and *Zamindari Kuhls* witnessed construction based encroachments on a larger scale,<sup>17</sup> the most devastating impact of which could be seen during the floods of 2014 which inundated both the rural and urban landscape of the Valley.

Moreover, a profound transformation in the historical relationship between peasants and irrigation in Kashmir, marked by mutual benefit and active involvement in construction and maintenance, underwent a profound transformation. Peasants, as direct beneficiaries, traditionally engaged in Halshari<sup>18</sup>—a communal practice of repairing, maintaining, and clearing silt from Zamindari Kuhls, enhancing both micro-level irrigation system upkeep and fostering a sense of ownership among beneficiaries<sup>19</sup>. However, a paradigm shift in cropping patterns over the years significantly reduced the dependence of peasants on irrigation canals. Consequently, participation in Halshari waned, leading to the deterioration of the canals. The decline in peasant involvement allowed encroachers to thrive, resulting in the choking of canals. Abdul Rahim of Dooru Shahabad noted that as peasants redirected their attention towards orchard planting, the decline in Halshari participation contributed to siltation in irrigation canals<sup>20</sup>. Local authorities recognized the importance of traditional water management through peasant participation. The Working Group on Command Area Development (1990-95) underlined:

The current system of irrigation management does not provide for collective efforts in self-governance by beneficiaries. The result is that there is no effort on the part of the peasants to maintain the irrigation canals nor the sense of economical use of water is being generated amongst the users. Irrigation is a community subject and unless all the peasants in a given area adapt themselves to a certain common approach in selecting crops, sowing season and cropping sequence; the water deliveries would not match exactly with the crop water requirements for getting higher yields<sup>21</sup>.

Appreciating the need for peasant participation in making the irrigation system effective and vibrant the Ministry of Water Resources circulated guidelines in April, 1987 for involving peasants in water management of irrigation system.<sup>22</sup> All state Governments were supposed to take peasants participation on pilot basis at least on one minor project comprising of about 1000-2000 hectares of area in each Command Area Development project for initiating the process of peasant's involvement for their effective participation in water management and maintenance of fields with the objective that in the long run the entire system up to minor level could be handed over to farmers for its effective management.<sup>23</sup> It was therefore felt that peasants' participation would ultimately ensure effectiveness in utilization of irrigation facilities leading to sustained higher levels of agriculture production.

### **Waterlogging and Glacier Shrinking and Floods**

No doubt, unlike Indian Plains irrigation canals in Kashmir did not led to waterlogging on a large scale as most of them were gravity canals, however, some canals and irrigation schemes caused waterlogging which diluted their otherwise positive impact. The Awantipora canal constructed in 1950's submerged vast fields of cultivable lands of *Marhama, Panchpora, Halmulla* and *Sethar villages*.<sup>24</sup> The submerged lands were turned into *Numbal* (marshy land) and became uncultivable. After consulting official documents and analyzing oral narratives we came to the conclusion that thousands of acres were turned unproductive after the construction of

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<sup>16</sup> The above information is based on a discussion between the researcher and Mohammad Maqbool Malik, Zildar irrigation Division Bijbehara, Government of Jammu and Kashmir on 2<sup>nd</sup> of December 2014

<sup>17</sup> Interview with Abdul Ahad, Resident of Delina Baramulla Dated 11/9/2015

<sup>18</sup> *Assessment Report of Kulgam Tehsil, Kashmir Valley, Jammu and Kashmir*, By LalaCharan Das, Assistant Settlement Officer Anantnag, (Allahabad, Profile Press, 1905).

<sup>19</sup> Ibid

<sup>20</sup> Interview with Abdul Rahim, Resident of Dooru Shahabad, Anantnag, 11/08/2015.

<sup>21</sup> *Report of the Working Group on Command Area Development for Formulation of the Plan Proposals for the Eighth Five Year Plan (1990-95)*, (New Delhi, Ministry of Water Resources CAD& WM Division, Government of India, September, 1989), pp. 19-25.

<sup>22</sup> D.J Bandr goda, *Institutional Adaptation for Integrated Water Resource Management: An Effective Strategy for Managing Asian River Basins*, (Colombo Srilanka, International Water Management Institute, 2006), pp. 5-9.

<sup>23</sup> Ibid.

<sup>24</sup> The above information is based on a dialogue between the researcher and Mohammad Amin Patwari Halqa Marhama Anantnag, Jammu and Kashmir on 19<sup>th</sup> of February, 2015.

this particular canal.<sup>25</sup> Similarly, waterlogging was caused by some canals in Sonawari and other low lying areas of the valley.<sup>26</sup> However, the problem of water logging was an area specific issue and existed only in few pockets of the low-lying areas.<sup>27</sup>

Another important issue concerning irrigation in Kashmir was the rapid depletion of its glaciers and frequent floods. The shrinking of glaciers was considered as a potential cause of water crisis as they were the main source of the canals.<sup>28</sup> Being the perennial hydrological source any recession in the glacier size was considered as a serious threat to the existing irrigation pattern of the valley.<sup>29</sup> Floods not only caused damage to the standing crops but they often damaged the irrigation system in multiple ways, especially by causing breaches in the canals and depositing voluminous silt into them. Indeed, after every major flood in the valley the irrigation system had to be almost rebuilt with huge expenditure. The damage caused by floods to irrigation system was further compounded by the absence of suitable link between irrigation schemes and flood control measures. By depositing loads of silt along the beds of canals, floods considerably reduced the carrying capacity of the canals leading to overflow and breaches at many places.<sup>30</sup> The damage caused to canals by floods also made agricultural operations troublesome.<sup>31</sup> Indeed, it would not be an exaggeration to say that floods were a perpetual threat to the irrigation system of the valley and any improvement in the irrigation system was subservient to prevention and effective management of floods. In this context that the state availed the expert service of Mr. D. G. Harris, consulting Engineer to the Government of India, in the aftermath of the 1929 floods to effectively deal with the problem.<sup>32</sup> The recommendations of Harris clearly established the interlinkages between irrigation and floods. As a remedy to floods he recommended that the existing bunds in Srinagar on the right side on the river Jhelum should be raised by 2 feet in their entire length and provided with concrete lining. The bunds on the *Sunti Kuhl* and *Sumri Kuhl*, three feeders of the Jhelum in Srinagar, were also to be strengthened.<sup>33</sup>

In the post 1947 period floods caused severe damage to irrigation. Underscoring the impact of floods on irrigation system The Daily Tribune, 4<sup>th</sup> March 1978 reported: "Flash floods due to heavy rain, on hills during the last few days created havoc."<sup>34</sup> According to reports reaching here the river water has washed away civil works and machinery worth Rs.10 lakh. This may delay the completion of the barrage, part of the Ravi Tawi Complex by at least one year. With these floods three out of eight wells have been filled with water and machinery worth Rs.1 lakh has been washed away. Dewatering operations will take at least one month."<sup>35</sup> The challenges thrown by floods to the irrigation system of the valley varied from place to place. Ali Mohammad a peasant from Sumbal, Bandipor, describes the impact of floods on irrigation canals in the following words:

The floods of 1992 affected Noru canal heavily it broke its mouth and took its both embankments for many years this canal remained out of use and created many problems for peasants, who repeatedly requested government for its improvement.<sup>36</sup>

Similar stories about the destruction of canals caused by floods was carried out by newspapers during the 2014 floods that heavily destroyed the economy of Kashmir. Thus, floods were the single most important challenge that irrigation in Kashmir was to face throughout history.

### **Delay and Suspension of Irrigation Projects: Financial and Technical issues**

In the state of Jammu and Kashmir irrigation initially did not face the kind of financial constraints as it did in other states of India. Perhaps, here it was the darling of development and received highest allocation during the early decades of planning. However, what is important to note is that as the government started far more new projects than could be accommodated within the amount of investment, the projects took normally

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<sup>25</sup> Revenue Records of Patwari Halqa Marhama, Department of Revenue, Government of Jammu and Kashmir

<sup>26</sup> Ghulam Hassan Khan, *Irrigation Flood and Food Problems in Jammu and Kashmir*, (Srinagar, Broca's Art Press, 1961)

<sup>27</sup> Ibid.

<sup>28</sup> Surya Prakash, *Report on Climate Change- its Impact on Agriculture productivity and Livelihood: The Policy Response*, (New Delhi, Indian Journal of Agricultural Economics, vol.66, July- Sep, 2011.)

<sup>29</sup> Ibid

<sup>30</sup> *Floods in Kashmir State*, (New Delhi, National Archives of India, 1928), File no. 324-Pof 1928.

<sup>31</sup> Ibid

<sup>32</sup> *A brief Report on the Administration of Jammu and Kashmir for the year, 1930*, (Srinagar, Directorate of Archives, Museums, and Libraries, Government of Jammu and Kashmir.1931).

<sup>33</sup> Ibid.

<sup>34</sup> *Daily Tribune*, 4<sup>th</sup> March, 1978.

<sup>35</sup> Ibid.

<sup>36</sup> Interview dated 25-9-2015

longer time to complete than expected. The average time taken to complete major projects was eleven years which was about four and a half years more than anticipated in the plans.

It was only after 1970's that financial allocations for irrigation in the state witnessed sharp decline thereby causing further delay in the completion of projects. The expert committee constituted by the Government of India in 1979 to look into the reasons for delay in the completion of irrigation projects across India and to suggest remedies thereof<sup>37</sup> while analyzing 6 projects in the state of Jammu and Kashmir found that against the original completion period of 5 to 10 years the revised targets covered 12 to 20 years.

The shortage of funds had delayed the construction of several irrigation projects in the state. In this regard *The Times of India*, 1<sup>st</sup> November, 1974 reported.<sup>38</sup> "Work on Jammu and Kashmir's prestigious Rs.30- crores Ravi Canal Project is being delayed, evidently because of lack of funds...The fate of the Ravi canal is still uncertain."<sup>39</sup> Not only in the state but even at the national level we have observed a downward trend in the investments in irrigation. Besides financial constraints the delay in the completion of irrigation projects was also caused by the lack of detailed construction planning, at the start of the project. In some cases, the profitability, financial and technical viability of the scheme were not kept in mind which either delayed the completion of the project or caused its suspension<sup>40</sup>. Political considerations at times also led to the launch of irrigation projects without a detailed plan which later had to be abandoned. For instance, in the early 1950's the construction of *Naigarh* canal in Kishtwar was taken in hand with a bang.<sup>41</sup> The estimated cost of the project was Rs 6 Lakh and was inaugurated by Shiekh Abdullah only after some excavation work of the canal was complete.<sup>42</sup> Interestingly for performing the inauguration the water in the canal was put with tins and buckets. The construction work on the canal continued for six years which incurred an expenditure of Rs 29 lac and was abandoned in 1958 after declaring that the project was not feasible<sup>43</sup> Not only this during the execution works, thousands of costly deodar trees were cutdown and destroyed, the cost of these trees was estimated over crores of rupees.

#### **Water Politics: The Indus Water Treaty**

Irrigation in Kashmir yet faced another problem with the partition of India in 1947. The problem came in the form of distribution of water resources between India and Pakistan in a mutual agreement called Indus Water Treaty. The Treaty was signed on September 19, 1960, between India and Pakistan and was brokered by the World Bank. The treaty fixed and delimited the rights and obligations of both countries concerning the use of the waters of the Indus River system and gave exclusive rights over the three western rivers of the Indus river system (Jhelum, Chenab and Indus) to Pakistan, and over the three eastern rivers (Sutlej, Ravi and Beas) to India. The region of Kashmir was put to a considerable disadvantage as a result of this Treaty as it was not allowed to fully exploit the water for irrigation and hydropower potential of its own rivers.<sup>44</sup> The Treaty limited the powers of irrigation department in the utilization of water for required irrigation.

In the Jhelum Basin, the irrigated cropped area on the effective date when the treaty was signed was 5,17,908 acres (209543 hectares).<sup>45</sup> The additional cropped area permissible, without any storage as per the treaty, works out to be 6,67,910 acres (267163 hectares), out of which 6,33,002 acres (2,56,172 hectares) has already been achieved in 2011.<sup>46</sup> The net irrigated area is estimated to be 4,79,621 acres (1,94,400 hectares) with irrigation intensity being about 1.36. To enhance the irrigation facilities and thereby maximize agriculture production the state government introduces different methods and techniques.<sup>47</sup> The large number of surface water schemes, lift irrigation schemes, dug wells; shallow tube-wells have also been

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<sup>37</sup> Yoginder. K. Alagh, *The Future of Indian Agriculture*, (New Delhi, National Book Trust of India,) 2013

<sup>38</sup> *Times of India*, 01. Nov. 1974

<sup>39</sup> *Times of India*, 01-11-1974

<sup>40</sup> The *Chuhur Nag* project which was supposed to irrigate the Kuthar valley of south Kashmir was one such projects. For more details see. Preliminary Report on *Tasurnag (Chuhur Nag)* for irrigating the Kuthar Valley, (Srinagar, Directorate of Archives, Museums and Libraries, Government of Jammu and Kashmir,) File.No.151/1/D of 198.

<sup>41</sup> *Motherland* 23<sup>rd</sup> May, 1974

<sup>42</sup> At the time of inauguration Abdullah made a strong speech and criticized the Maharaja's Government for ignoring the development of Kishtwar region. For details on the speech see *Motherland* 23<sup>rd</sup> May, 1974

<sup>43</sup> *Ibid*

<sup>44</sup> Raja Nazakat Ali Khan, *Indus Water Treaty-A Geo-Political Study*, unpublished PhD thesis, Institute of Kashmir Studies, University of Kashmir, Srinagar, 2013, p.156

<sup>45</sup> *Ibid*.

<sup>46</sup> *Ibid*.

<sup>47</sup> *Economic Survey of Jammu and Kashmir State*, (Srinagar, Department of Statistics, 2011), p. 60

developed.<sup>48</sup> It is also evident that on the Jhelum basin in Kashmir Valley, there is no scope for further irrigation. However, to achieve the permissible irrigated cropped area of 9, 17,909 acres (i.e. ICA as was irrigated on the effective date plus the ICA permitted under the Indus Water Treaty),<sup>49</sup> it is apparent that the future projects in the Jhelum Basin ought to be stored based projects, from where the releases as per the provisions of Indus Water Treaty can be made for further irrigation. The Indus Water Treaty restricted the State from harnessing water for mega irrigation projects and therefore acted as a bottleneck in the irrigation development of the state.

### **Equity and Effectiveness**

Irrigation development in the state of Jammu and Kashmir followed a skewed path after 1947. There were regional disparities in irrigation development and variations existed in irrigated area across different tehsils of the state.<sup>50</sup> The uneven irrigation resulted in extensive development of some areas and while others, particularly *Kandi* areas, remained entrenched in backwardness.<sup>51</sup> According to the irrigation statistics of 2005, Ganderbal, Pulwama and Budgam tehsils were the leading irrigated areas of the valley with around 75% of their net sown area with irrigation facilities. Baramulla, Pampore and Karnah tehsils were the least irrigated tehsils of the valley. For the purpose of achieving inclusive growth it was therefore necessary to narrow the gap between different regions by undertaking area specific irrigation projects albeit taking into account the constraints imposed by the technical feasibility of irrigation and inter- regional differences in the cost of returns to irrigation. It was in this context that lift irrigation schemes were launched in the state with a renewed vigor in 1980's. However, lift irrigation being costlier than gravity irrigation both in capital and revenue expenditures could not be used on an extensive scale to reduce the level of disparity in irrigation development. Of late sand extraction also caused malfunctioning of the lift irrigation schemes and thus reduced their effectiveness in reducing inequity.<sup>52</sup> Regarding lift irrigation the cultivators of the valley largely remained unsatisfied with the Irrigation Department.<sup>53</sup> They often complained that during the sowing season the department usually failed to fulfill the requirements of cultivators<sup>54</sup>. The Srinagar based English newspaper, *Greater Kashmir* reported the problem as under:

"As Kashmir readies for seasonal paddy cultivation, farmers in this north Kashmir tehsil are in a fix: reason, the canals are running dry, the farms parched and poor power supply hampering lifting of the water from river Jhelum for irrigation purposes....., the drought like situation has once again triggered an irrigation crisis here. There is no water we do not know what to do", said a group of farmers in *Hajin* town."..... But lift irrigation is defunct in the area in absence of proper electric schedule" he said. Tehsil sonawari is famous for paddy cultivation in Kashmir and majority of the people are dependent on agriculture. The crisis is also prevalent in peripheries namely, Madvan, Gund Jahangir, Asham, Shahgund and some parts of Sumbal".<sup>55</sup>

### **Pricing of Irrigation Water**

The pricing of water was another crucial issue facing the irrigation system of Kashmir. In the pre-1947 the state charged *Abiana* (water rates) as per the production potential of land and the same was used for the maintenance of the canals. However, as the peasantry was subjected to severe taxation it was often not in position to pay the annual *Abiana* and the same was shown as arrear against them. Though the state hardly remitted the *Abiana* arrears but this caused financial uncertainty for the canals and hampered their repairs. The Canal Committee appointed in 1920 to consider the question of improving the financial aspects of the irrigation canals under lined that a considerable amount of *Abiana* had remained unrealized over the years thereby severely affecting the canal functioning. According to the committee the unrealized balance of *Abiana* at the end of 1925 was 2, 27,535.<sup>56</sup>

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<sup>48</sup> Ibid.

<sup>49</sup> Ibid.

<sup>50</sup> Nasir Ali, *Panorama of Agriculture in Jammu and Kashmir*, (New Delhi, Rima Publishing House, 1992), pp. 50, 51, 110

<sup>51</sup> A. R. Bhat, *Human Resource and Socio-Economic Development in Kashmir valley: A Geographical Interpretation*, (Delhi, Dilpreet Publishing House,) pp.151- 160.

<sup>52</sup> N. C. Prabhakar and N.S. Gupta, *Socio -Economic Development in Jammu and Kashmir* (Jammu, Jay Kay Book House, 1988,) pp.101-105.

<sup>53</sup> Ibid

<sup>54</sup> Interview with Ghulam Nabi Bhat a cultivator of Padgampora Pulwama, J & K on 16<sup>th</sup> of November 2019.

<sup>55</sup> Ibid

<sup>56</sup> *Report of the Public Works Department, Irrigation Branch, 1924-25*, (Srinagar, Department of Archives, Museums and Libraries, Government of Jammu and Kashmir, 1925

For the purpose of meeting the expenditure incurred on the maintenance of the canals the state continued to assess and appropriate *Abiana* and ensured that the canals remained functional so that the land revenue generated does not decline. According to the Annual Administrative Report of 1944-45 the total assessment on account of *Abiana* and other sources on the canals was 6, 07,990 against Rs. 5, 58,047 of the previous year.<sup>57</sup>

In the post-1947 period although irrigation development became costly but there was no significant increase in water price. In order to keep its political constituency intact the government refrained from increasing the *Abiana* rates. In fact, there was a sort of political resistance against the raising of water rates and hardly any initiative was taken by the state towards rationalization of water rates based on cropping pattern, productivity and consumption of water. Regarding the water rates in the state the *Daily Tribune*, March, 1973 reported "Charges for irrigation water are lowest in Jammu and Kashmir". However, despite very low rate the cultivators were hesitant to pay *Abiana*; the state was also negligent in collecting *Abiana* from the cultivators<sup>58</sup> and by the end of 1973 financial year the *Abiana* arrears in the state had reached to the extent of Rs. 64 lakh. It was in this connection that the Public Accounts Committee of Jammu and Kashmir Legislature was empowered to suggested various steps for the realization of arrears on the account of irrigation levy. The Secretary of the Irrigation Department informed the Committee that Rs. 30.35 lakhs were pending recovery in Jammu region and Rs. 34.95 lakhs in respect of Kashmir Division.<sup>59</sup> These arrears were three times the total receipts from irrigation canals.<sup>60</sup> Needless to mention here that low water rate had only a nominal impact on water use decisions by the cultivators.<sup>61</sup>

## II. Conclusion:

The examination of the Irrigation System in Kashmir spanning the period from 1950 to 1990 demonstrates a deep and complex tapestry of ecological, political, and societal dynamics that collectively influenced the deterioration of the vital irrigation infrastructure. Encroachment on canals, ecological repercussions, and delays in project completion emerged as primary catalysts for the challenges faced by the irrigation system. Shift in cropping patterns, leading to diminished water requirements subsequently reduced peasant participation in the communal repair and maintenance of canals. Moreover, financial constraints further compounded the issue, hampering the timely completion of projects and fostering an environment of neglect. The consequences of these factors have not been uniform across regions, exacerbating inter-regional disparities in access to irrigation facilities. While some areas benefited, others suffered from a lack of equitable distribution of resources, intensifying the societal and economic disparities within the region. Moreover, the shadow of the Indus Water Treaty looms large, severely constraining the development of irrigation projects. The geopolitical implications of the treaty have not only impeded the efficient utilization of water resources but also added an additional layer of complexity to the challenges faced by the irrigation system in Kashmir. In conclusion, the multifaceted dynamics surrounding the Irrigation System in Kashmir underscore the need for a holistic and context-specific approach to address the ecological, political, and societal challenges. Resolving these issues demands not only technical solutions but also a nuanced understanding of the social and economic dynamics that shape the region. Moving forward, policy interventions, financial investments, and community engagement will be essential to revitalize and sustain an effective irrigation system that aligns with the evolving needs of Kashmir's agricultural landscape.

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<sup>57</sup> Ibid

<sup>58</sup> Ibid

<sup>59</sup> *Motherland*, 23<sup>rd</sup> of May 1974.

<sup>60</sup> Ibid

<sup>61</sup> *Report of the National Commission on Agriculture 1976, part 5*, (New Delhi, Ministry of Agriculture and Irrigation, 1977) p. no. 201-211