

## **THE IRRIGATIONAL SYSTEM IN EARLY MEDIEVAL KASHMIR**

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### **Abstract**

*The irrigational system plays an important role in the development of agriculture. The irrigational system has been mentioned in the primary sources like Nilamata Purana and Rajatarangini. The secondary sources are also used to supplement the study. The rulers of Kashmir, especially Lallitaditya and Avantivarman, undertook various measures to protect the cultivated lands from floods and conserved the water for irrigation purposes, which resulted in the spread of agricultural expansion to a large extent. The irrigation minister of Avantivarman namely Suvya played an amazing game in this direction. The present paper studies the role of the irrigational system in the development of agriculture in early medieval Kashmir.*

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## Introduction

Agriculture has been one of the prominent occupations of India since ancient times. In early India, the outcome of agricultural produce depended mainly on monsoon. Due to the unseasonal and insufficient rainfall, the peasants had to depend on irrigation. The term irrigation implies the artificial application or process which supplies water to the soil in countries where the rainfall is insufficient. The irrigational system helps the farmers to have less dependence on rainwater for the purpose of agriculture. It played an important role in the input of the agricultural production process. Since the ancient period, there have been many provisions for the storage of water like big tanks and reservoirs, which were made to meet the requirements of agriculturists in different seasons. The irregularity and unequal distribution of rainfall led to the digging of wells and water channels for irrigation.

Irrigational facilities have been prevalent in Kashmir since ancient times. Agricultural land required orderly water system. The valley has been blessed, as it possessed water resources in abundance. These resources function as a key to its economic progress. *Nilamata Purana* refers that there was no regular irrigational system prevailing in Kashmir.<sup>1</sup> But, the term *adevamatrika* mentioned in the *Nilamata Purana* reveals that the lakes, rivers, and fountains were the main sources of irrigation in the valley.<sup>2</sup> The topography of Kashmir makes irrigation of land very easy due to the availability of water that helps in irrigation. In context to this, Lawrence writes, “owing to the heights at which water can be taken off, there is scarcely any part of the valley which cannot be irrigated.”<sup>3</sup> However, there were certain areas where water scarcity was felt.

The floods often occurred in the valley during the summers when the snow melted and the great volume of water coming from the mountains overflowed the banks of the river, thus destroying the crops of fields and resulting in the famines<sup>4</sup>. The rulers of Kashmir undertook various measures to protect the cultivable lands from flood disasters and conserved the water for irrigation purpose. The first attempt in this regard was taken by King Suvarna in the pre-Ashokan

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<sup>1</sup> *Nilamata Purana*, tr. Ved Kumari, J&K Academy of Art, Culture and Languages, Srinagar, Ed. 1968, p.126

<sup>2</sup> *Ibid*,

<sup>3</sup> *Ibid.*, see also Lawrence, W., *The Valley of Kashmir*, Oxford University Press Warehouse, London, 1985, p.324.

<sup>4</sup> Ray, S. C, *Early History and Culture of Kashmir*, Munshiram Manoharlal Publishers, Delhi Ed.1969, p.105.

days who built the canal called *Suvarnamanikulya* (present Summun Kul) so that water could be easily fetched to the Karala area.<sup>5</sup> It irrigated a part of the *advin pargana* on the alluvial plateau to the south of the Ramgar river in the district of the Kulgam. His successor, King Damodar II also paid heed in extending the irrigational system. Kalhana refers to long stone dykes, which were built by King Damodar II to protect against inundations.<sup>6</sup> The same king constructed a dam called *Guddasetu*<sup>7</sup> for bringing water into the town which he himself built on the Damodara Suda<sup>8</sup>. These embankments were also erected by a minister of king Baladitya.<sup>9</sup> The embankments were needed to guard the cultivable lands against the floods and later, the water was restored and used for irrigating the fields. Stein furnishes information that the artificial irrigation channels of the ancient date are found on other alluvial plateaus mainly on the *udars*<sup>10</sup> of Martand and Zainpur.<sup>11</sup> Mihirkula the ruler of the sixth century AD redirected the river, *Chanderkulya* but the work of irrigation got impeded because of the rock lying in the course of the river.<sup>12</sup> Raja Baka also built up the Bakavati canal for the same purpose.<sup>13</sup>

<sup>5</sup>Kalhana, *Rajatarangini*, tr. Stein, M.A, Vol. I, Bk I, Motilal Banarsidass, Delhi, Ed. 1979, v.98.

<sup>6</sup> Ibid, Bk I, v.159; see also Ray, S. C, Op.Cit, p.105; Bamzai, P.N.K, *Kashmir History*, MD Publications. Pvt. Ltd, New Delhi, Ed.1994, p.231.

<sup>7</sup> Kalhana, Op,Cit, Vol.I, BK I,v.156

<sup>8</sup> Ibid, BK I,v.157. The Sanskrit term *suda* means a place where the soil is barren.

<sup>9</sup> Ibid, BK III, v.483.

<sup>10</sup> The Kashmir valley was divided into two parts. One incorporates the plain formed by alluvium of the Jhelum and its tributaries and the other one includes plateaus or *udars* raised over the plain. The latter contains high ground called *udar* in Kashmir, *karewa* and *udder* in Persian and Sanskrit chronicles respectively. The *udars* are considered by geologists to be direct result of alluvial stores. They happen either confined or inclined with the mountains that encompass the valley. They rose generally from 100 to 300 feet over the level of the valley. The vast majority of them are found on the south-western side extending Shopian to Baramulla. Those *udars*, which are attached to the mountains, are cultivated with the help of water courses brought from the higher ground. Owing to the average quality of the soil they are considerably less fertile. The other *udars* which are entirely isolated comprise entire wastes covered with low jungle and if cultivated yields only poor crop because of the unpredictable of the rainfall and inconvenience of water framework.( Kalhana, Op.Cit, p.425)

<sup>11</sup>Ibid, BK I, fn.157.

<sup>12</sup>Ibid, BK I, v.318.

<sup>13</sup> Ibid, BK I, v.329.

During the early medieval period, different rulers of Kashmir made advancement in the irrigational system of the valley. Lalitaditya of the Karkota dynasty is remembered in the history of Kashmir for introducing new methods of irrigation. He initiated several schemes for the development of agriculture. He made efforts to save the country from recurring floods and enhanced the production activity. Our sources do not present in detail the names of canals built during the time of Lalitaditya. However, a blossoming agricultural segment of his period in itself was unthinkable without promoting the water of regular streams. Although the rulers of Kashmir sought for the alternative water framework, where it was not possible to create canals due to geographical constraints. Thus, new technological methods were introduced. Especially, Lalitaditya introduced special provisions for the irrigation of Cakradhara (modern Tasakdar) Karewa by lifting water from river Jhelum. The earliest evidence of the use of *arhatta*<sup>14</sup> comes from the eighth century. Kalhana in his work gives a detailed account of the construction of a series of water wheels (*arhatta*) and its distribution to various villages.<sup>15</sup> He also mentions the arrangement made for channelling the water of the *Vitasta*<sup>16</sup> at Cakradhara. These drained operations opined by him were meant to increase the productivity of agriculture and therefore, saved the country from the grip of floods. The Lalitaditya's wife namely Ishanadevi also dug up a well which cured the people suffering from diseases.<sup>17</sup> His successors neglected the improvement of irrigational activities, which resulted in the recurring of floods once again in the valley.

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<sup>14</sup> In Sanskrit the word *araghatta* or *araghatta* has been used in the ancient texts to describe the Persian wheel. The term is usually mentioned with another irrigational device called *ghatyantra* (pot garland). Such a device was comprised of various pots fixing to a rope likely set on a profound well and moved with the assistance of pulley. It is generally mounted on the wheel but not attached to its rim. (Ranbir Chakarvarti, 'Agricultural Technology in Medieval India', *The Medieval History Journal*, Vol.II, No.2, July- December,2008)

<sup>15</sup> Kalhana, Vol. I, BK III, v.483; Bk IV, v.191; fn v.70; Lallanji. Gopal, *Economic Life of Northern India*, Motilal Banarsidass, Delhi, Ed. 1965, p.283; see also S. C. Ray, Op,Cit., p.105; Bamzai, P.N.K, Op.Cit., p.231.

<sup>16</sup> River Jhelum, the most important naval transport of Kashmir valley is commonly known as *Vitasta*. According to *Nilamata Purana*, *Vitasta* was an incarnation of *Uma* and at the request of *Kashyapa* came to form as a river. (*Nilamata Purana*, tr. Ved Kumari, Vol.II,p.73) *Rajatarangini* referred that *Vitasta* originates from Vernag (present Verinag), a big octagonal spring about 26 kilometers away from Anantnag.

<sup>17</sup> Ibid,BK IV, v.212.

The king Avantivarman of Utpala Dynasty (855-883A.D), took a progression of changes which recovered the wounds of the suffering people. In order to save the whole valley from depletion, the water of *Vitasta* was brought under control. This was the reason which made Avantivarman the most lovable for masses. His rule was famous for bringing the agricultural revolution to the valley. Till then and the production was insufficient to the valley of Kashmir. Further, problems were added by the frequent floods. Suyya the irrigation minister of King Avantivarman was a prominent name mentioned in the *Rajatarangini*. He brought several changes in irrigation. The ruler utilized the services of his able minister, who had been called the Lord of Food (*annapati*).<sup>18</sup> He is remembered for draining the water of *Vitasta* river and controlling it by constructing a stone dam and clearing its bed. Thus, he was able to shift the junction of the *Vitasta* and the *Sindhu* from old to its existing position.<sup>19</sup> Formerly, it was near Trigam in the Lar Pargana that the *Vitasta* and *Sindhu* rivers met and turned a large area in the swamp. Suyya changed their junction to the present place near Srinagar and combined these two rivers that flow through Wular lake. He built protective stone embankments for seven *yojanas* along the river.<sup>20</sup> In fact, he is credited for the different streams of *Sindhu* and *Vitasta* which flowed according to his will, like a snake charmer dances his snakes.<sup>21</sup> The villages were protected by the construction of circular dykes, which gave the appearance of round bowls (*Kunda*). So, it was by the joint efforts of king Avantivarman and his able minister Suyya that new lands were brought under cultivation, resulting in enhancement of the production, which was beneficial both for the state as well as for the people. He saved the country from the recurring floods and famines.

Famines occurred often due to the frequent floods in the Kashmir. We have already mentioned that King Lalitaditya with great effort used accumulated water. However, his successors neglected the welfare works for the people, which resulted in floods that ruined the country. The price of one *khari* of rice was paid for ten hundred fifty *dinars* in famine-stricken areas.<sup>22</sup> This

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<sup>18</sup> Ibid, Bk V ,v.72, fn 72.

<sup>19</sup> Lallanji. Gopal., Op,Cit., p.283-284.

<sup>20</sup> Ibid, Bk V , v 103; Lallanji. Gopal, Op,Cit., p.284.

<sup>21</sup> Ibid, BK V, v.102;

<sup>22</sup> Ibid, BK V, v.71.

was beyond the purchasing power of a common man. The situation continued until the intervention of Suyya's intention. He perceived that the valley was flooded because the water of the Vitasta could not flow through the narrow passage near Baramulla. This passage had been continually falling into it from the hillside. The only problem was of clearing water and widening river passage. However, Suyya used a simple method to achieve this goal. Suyya took many pots full of money (*dinars*) in a boat and went towards *Madavarajya*.<sup>23</sup> He threw some of the money in a village named *Nandaka* which was submerged in flood water and then quickly came back.<sup>24</sup> Then he went to another place at *Yakshadara* and threw a lot of money into the river.<sup>25</sup> Except for king, the councillors of ministers and people thought that he had gone mad.<sup>26</sup> But, there was an opportunity for people to get money. Therefore they jumped into the river and searched for money while doing so dragged out of the river rocks.<sup>27</sup> For two or three days Suyya repeated this process and the people made their fortune by collecting money from the river. They cleared the mud, slush and stone from the banks. This noteworthy engineer Suyya then blocked the whole river by the construction of a dam of stones at a site and got the silt removed from the river.<sup>28</sup> Embankments were raised on both sides of the river respectively in order to check from falling into it.<sup>29</sup> This operation took another seven days and the dam was destroyed.<sup>30</sup> Finally, new beds were constructed for the river at such places where floods occurred frequently. The river flowed out at a faster speed to the *Mahapadma lake*<sup>31</sup> (Wular Lake). Consequently, the water flowed down. Thus, the irrigational system was developed by Suyya in such a manner that everyone was supplied with a fair share of water. Kalhana mentioned that Suyya first examined the different

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<sup>23</sup> Ibid, Vol.I, Bk V, v.84.

<sup>24</sup> Ibid., v.85

<sup>25</sup> Ibid., v.87

<sup>26</sup> Ibid., v.86.

<sup>27</sup> Ibid., vv.88-89.

<sup>28</sup> Ibid., v.94.

<sup>29</sup> Ibid., v.91

<sup>30</sup> Ibid.,

<sup>31</sup> The Wular Lake is one of the largest fresh water lakes in Asia. It is located in the Bandipora district of the valley. In ancient times, Wular Lake was called *Mahapadma lake*. *Nilamata Purana* also mentions it as *Mahapadmasaras*. The Naga Mahapadma is the tutelary God of the Wular which has gotten its old name *Mahapadma Lake*. (Kalhana, Op.Cit, BK IV, fn 593).

classes of land and irrigated villages, especially those areas which were no longer dependent on rainfall.<sup>32</sup> Hence, every locality was provided water according to its need and requirement, which resulted in the maximum agricultural produce. These steps were taken by Suyya not only to save the village from famines but also to increase the production on a large scale.<sup>33</sup> According to Kalhana prior to Avantivarman, the price of *dhanya* (rice) was two hundred *dinaras* but during his reign, its price was thirty-six *dinaras* which were the lowest price ever witnessed by the valley.<sup>34</sup> According to Kalhana, “ neither Kashayapa nor Samkarsana (Balabhadraa) bestowed those benefits which the virtuous Suyya produced with ease in that land.”<sup>35</sup>

Harsha, the ruler of the Lohara dynasty is also credited with the construction of the Pampa Lake. This lake was identified by Stein with the modern Pampasar.<sup>36</sup> It was adorned with various birds and animals extended to the curved shores of the horizon

Thus the above facts reveal that the welfare plans played an enormous role in the development of agriculture. These works were significant in a state where agriculture forms the base of economy. The initiative of rulers in providing and managing water framework led to the surplus growth of multiple crops. This subsequently satisfied the demand of hungry masses and at the same time led to trade and urbanisation. Now the surplus produce was supplied to the towns and it became possible for people to engage in allied activities. Hence, the irrigational engineering works brought an end to food scarcity and led to the all-round development of agriculture.

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<sup>32</sup> Ibid., v.109.

<sup>33</sup> Ibid, Bk VI. V.110-112; see also Chaudhary. R., *History of Ancient India*, Janaki Publications, Patna, Ed.1982, p.110.

<sup>34</sup> Kalhana, Op.Cit., Bk VI. vv.116-117, see also Bamzai, P.N.K, Op.Cit., p.231.

<sup>35</sup> Kalhana, Op.Cit., Bk V, v.113.

<sup>36</sup> Ibid, Vol. II, Bk VII,v.940; Gopal, L., Op,Cit., p.284.