

Water Resources and their Management in Kashmir

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The valley of Kashmir has been a great seat of learning and erudition from its hoary past. Its beauty and verdure, snow-capped peaks, sparkling waters, rustling leaves of dense forests, lakes and springs, have charmed poets and creative minds to sing its praises, calling it ěa paradise on earthí. Inspired and motivated by the pristine beauty of the landscape, the genius of Kashmir has contributed to almost all segments of human knowledge and creative ventures.

Among the earlier settlers in Kashmir are believed to be Nagas. There are geological and mythological reasons to believe that the valley was once a vast span of water, similar to a huge dam, walled in by high mountains. The *Nilamatapurana* records how the valley was elevated out of water and left under the care of the Nagas, of whom Nila, the son of Kashyapa, was the chief. Although legends are legends and do not provide hard evidence in most cases, the present description regarding the drawing of water is reconcilable with the geological scenario of violent earthquakes accompanied by darkness and cloudburst.

It is said that the valley is named ěKashmirí after Kashyapa. The term ěnagaí stands for spring, *chesmah*, and *negin* for small spring. Springs are the main source of water in Kashmir. The five primordial elements (earth, fire, water, air and sky) are, in fact, complementary to the peopleís rituals, cognitive system, religious beliefs and sacrificial practices. Interestingly, the auspicious and famous river of Kashmir, the Vitasta (Jhelum) originates from a spring near Verinag and is responsible for the water supply to most parts of the valley. The religious significance of the river is established by the *Nilamatapurana* when it records the entire land of Kashmir as the material manifestation of Uma and describes her as the divine form of the Vitasta.¹

Apart from meaning a spring, the term *naga* had tremendous theo-cultural relevance for the lives of the people of Kashmir. As the sacredness of water gets echoed in the worship of *nagas*, the Naga as spring is the source of life. Some scholars have identified the *nagas* as personified forces of nature.

Naga Worship

A large number of temples were built near springs and were dedicated to the worship of *nagas*. The *Nilamatapurana* admits that *nagas* reside in lakes and springs. These places have become great centres of religious pilgrimage. The place names of certain areas, e.g. Verinag, Anantnag and Seshanag even today remind one of the intimate relations between the valley and the popularity of the Naga cult. The *Rajatarangini* of Kalhana mentions Sushravas and Padma Nagas, who were tutelary deities connected with the Wular lake. The Dikpalas of Kashmir are believed to be four *nagas*, viz. Bindusara in the east, Srimadaka in the south, Elapatra in the west and Uttarmansa in the north.

There are many festivals in Kashmir which have a bearing on the worship of Nagas, for example during the first snowfall, Nila, the Lord of Nagas, is worshipped. The Nagas are also propitiated in April and are related to *Iramanjari Puja* and to *Varuna Panchmi*, which is organised in July-August. Kashmir spoke highly of the festival in the darker half of the month of Jyeshtha, when a big festival is organised to propitiate the king Taksakyatra. The *Nilamatapurana* listed 527 Nagas that were worshipped in Kashmir. In the account of Abul Fazal, the court historian of Akbar, there are references to seven hundred places sacred to serpents.

The *Nilamatapurana* also draws attention to the close association of the cult of Nagas and that of Shiva. In the *Mahabharata* and *Harivamsa* texts, Sesa was considered the son of Shiva. Such an

attempt at compromise was also attempted between the cult of Vaishnava and the cult of Nagas. The Nagas became Vishnu in the *seshashayi* form, which belongs to water cosmology, and his images were made accordingly. Balarama, the elder brother of Krishna, is the personification of the snake and he is Ananta incarnated in human form. Names like Vishnasar and Krishnasar carry Vaishnavite import. Interestingly, the word *sar* stands for reservoir. The goddess Lakshmi is said to have taken the form of the river Visoka (now known as the Vishov) to purify the people of Kashmir. Most probably, treating springs and rivers with great reverence wittingly or unwittingly resulted in the ecological balance necessary for a healthy and natural interaction between the environment and man.

In Muslim-dominated contemporary Kashmir the spring is understood as *naga* and enjoys the respect of every religion. It is generally believed that every *naga* has a snake as its guardian deity. Fishing is prohibited in these springs, though the fish which come out of the main *garbha* of a *naga* can be caught. Restrictions on fishing have definitely helped to some extent to preserve water ecology. Hindus still propitiate these *nagas*. At Martanda Naga even *srada* is performed. Water is offered by Hindus to the Sun God and to their ancestors (*purva*). Before having *darshan* of the snow *linga* at Amarnatha a holy dip is essential in the Seshanaga. A person suffering from a skin disease is said to be cured after having a bath in Gandhakanaga (sulphur spring) at Naghbal, Anantnag.

Muslims show their respect for these *nagas* in many ways. They offer sacrifices and organise fairs on many festivals such as *Id*. Even they do not catch fish in these *nagas*. Their faith in *nagas* can further be established by an example from Anantnag district, where during days of water scarcity or extra rainfall, people offer sacrifices to the Vasuk Naga (the water of which remains in the valley during summer only and disappears in winter). They have full faith that offerings to Vasuk will bring rain or stop it as desired.

Besides, spring water is considered pure for drinking. The Public Health Engineering Department of the state supplies spring water to most urban and semi-urban areas. In most of the rural areas there is at least one *negin*² (small spring) within the boundary or nearby. The people also prefer to take baths in spring water because it remains hot in winter and cold in summer.

Water Management

With the vast majority of Kashmiri people living in villages and their income coming mainly out of land, the importance of irrigation is considerable. Being a hilly state, the problem of irrigation is complicated in many areas. At higher altitudes the main source of water is *naga* or lift irrigation. The first claim on the water of a spring is of the village near it. Paddy, the staple food, is generally grown on the fertile lands adjoining the river Vitasta, although it is produced on some higher plateaus also.

The autumn or *kharif* crops consist of maize, pulses (*moong*, *mash* and *motha*), etc. The spring or *rabi* crops include wheat, peas, beans and mustard. Thanks to the formation of the valley, irrigation is easy and in ordinary years abundant. If there is normal snowfall in the winter and the great mountains are well covered, the water supply for rice is sufficient. On both sides of the Vitasta, the valley rises in bold terraces, and water passes quickly from one village to another in years of good snow. In earlier times, at convenient points on the mountain, weirs or protecting snags were erected, and the water was taken into main channels which pass into small networks of ducts and eventually empty themselves in the Jhelum. Lower down in the valley, where the streams flow gently, dams were erected. On every main channel there was a *mirab* ó one of the villagers ó whose duty it was to maintain the system.

In earlier days, in alluvial plateaus water was scarce. Many kings of Kashmir, therefore, tried to extend irrigation facilities there. The first known work of this kind was a canal called Suvarnamani (modern Suman Kul) constructed by king Suvarna in the pre-Ashokan age. It irrigated a part of the Advin Pargana, situated on the alluvial plateau to the south of the Rembyar river.

In the eighth century a great ruler of Kashmir, King Lalitaditya, is credited with having introduced a new device called the water wheel for raising water to the higher plateaus. In this device a peasant used a long pole at the top of which was a bucket to be with water, balancing it with his feet to draw the water from a well or channel. At present this inexpensive method is used in many parts of the

valley, especially for the irrigation of house gardens, and the device is now called *tol* or dip-well. With the advance of technology diesel or electric pumps are preferred for the lift irrigation of agricultural lands. For this purpose the Government of Jammu and Kashmir has a department of irrigation which looks after the lift irrigation schemes.

In Kashmir the problem of recurring floods, especially in the Vitasta, was often caused by heavy summer rains and melting of snow which flooded the arable land around. To protect cultivable lands from floods, attempts were made from early times. According to Kalhana, King Damodara built stone-lined dykes in order to guard against inundations. The minister of King Baladitya erected an embankment. The construction of embankments was meant to protect cultivable land from floods, and the surplus water thus obtained could be passed into several channels to irrigate other fields. An important attempt in this direction was made by King Lalitaditya, who arranged for distributing the waters of the Vitasta at Cakradhara (modern Tsakadar) to various villages. These drainage operations made the valley productive to some extent. But the work of irrigation started by the monarch was neglected by his incompetent successors. However, an attempt was made by Suyya, the irrigation minister of King Avantivarman in the ninth century to regulate the waters of the Vitasta and to drain the whole valley. Near Yaksadara (modern Dyargul), large rocks which had rolled down from the mountain, lining both banks, obstructed the Vitasta. Suyya dragged out the rocks and the level of the river was lowered. He thus regulated the water of the Jhelum, constructed protective works and arranged for the supply of water to each village on a permanent basis. He dammed the lake, which by its depth and well-defined boundaries was naturally designed as a great reservoir to receive the surplus waters of the dangerous floods. The endeavours of Suyya met with unique success.

Due to lawlessness and insecure conditions, agriculture steadily declined. With the advent of Islam in the valley, Hindu rule came to an end in the fourteenth century. The Muslim rulers did not give any attention to the development of the valley. Sultan Zain-ul-abidin (fifteenth century) was perhaps the only Muslim ruler who was keen to cure the miseries of the cultivators and promote their welfare. Agriculture occupied his special attention. One important measure was the construction of canals in the valley. To quote Srivara, "There was not a piece of land, not a region and not a forest where the king did not excavate a canal. Some of these were the Kakapur canal, the Karla canal, the Chakdar canal, the Avantipur canal, the Shahkul canal (of Safapur), Lachham Kul or Zainaganga, Lall Kul or Pohri canal, Shah Kul on the Martanda canal and the Mar Canal. The Shah Kul was taken out on the left bank of the Lidder river and ran along the face of the limestone cliffs above Martanda. Here it split into four distributing channels, and finally fell over the edge of the plateau into the Jhelum valley at Anantnag. Some of these canals are still important sources of irrigation, but in most cases they have narrowed down. Before the Mar Canal was constructed, the surplus waters of the Dal Lake used to flow into the Jhelum river at Habba Kadal. This junction was closed, forcing the outflow of the lake's water into the Mar Canal, which then extended up to Shadipura. Several other earlier canals were revived and repaired, and some of them supplied water to otherwise dry Karewa lands. At present the Vitasta has narrowed,³ which is the main cause of floods in the valley over last many years. The river needs a fresh drainage programme, and the traditional knowledge system can play an important role in its management. As tourism is an important industry in Kashmir and the Jhelum one of the main attractions, it is necessary to take up the task of drainage on a priority basis. Tourists also like to stay in the houseboats, which are either in the Jhelum or in Dal Lake.⁴

The net result of the above irrigation projects was the draining of marshes and the reclamation of large areas for cultivation, which is essential while looking to the growth of the population.

Besides irrigation, water was used in many ways in the valley. The tradition of *pana-chaki (greta)* still continues in many rural areas.

We should keep in mind that the state of the environment of any place is an indication of its spiritual health, in which the deeper issues of culture, values, politics and the economic and social outlook of a community are involved. Besides, no eco-system is altogether self-contained; it is further linked to another system and so on. The scarcity of snowfall in the winter can lead to a famine. Although nature has endowed the valley with beautiful gifts, the inner forces of matter and mind are stamping these gifts out of existence at a rapid pace. The priorities and patterns of development, coupled with whimsical decision-making, have greatly contributed to the brutalisation of the landscape,⁵ the silting

of the great lakes and rivers, the pollution of air, water and soil. Not long ago, the high mountains of Kashmir supported one of the densest and richest subtropical and temperate forests of the world, covering more than 60 per cent of the total land area. But after the mid-1970s there has been a licensed massacre of green trees. Currently the jungles of Kashmir are destroyed in search of *kuth*, a highly priced medicinal plant. The smuggling of wood for building, etc., has been high for many years.⁶ As per a recent study about 91 thousand hectares of forest land were lost to various development projects during the period 1952 to 1976. The deforestation in the valley has unfortunately disturbed the ecological balance and has lessened the average snowfall. Because of it there is scarcity of irrigation and drinking water in the summer season. At many places drinking water is supplied by the Public Health Engineering Department in tanks, and irrigation is mostly dependent on rainwater. If all this is not controlled at this stage the economy will be shattered. The dream of industrialisation which we people also see in Kashmir will come to a stop, as most industries are dependent on electricity, which is produced by hydel projects in the valley. It will not be wrong to say that the economic progress of the place is largely dependent on water and its proper management.

Similarly, the problems arising from the pollution of air, water and soil caused by cement factories, stone crushers, brick kilns, smelting industries and the unchecked use of chemicals have become very serious. It seems that ecological consciousness is confined to words only. Even after 49 years of freedom there is not scientific sewerage system in the summer capital (Srinagar) of the Jammu and Kashmir state. The night-soil, which is carried on the head or in poorly maintained vehicles, spreads a foul smell all along.

The inhabitants of houseboats and the boatmen living in *dongas* dispose of their refuse in the Dal Lake or the Jhelum, thereby polluting the water. It has been shown that the drinking water supplied to some parts of Srinagar city was worse than the polluted water of the Jhelum. This polluted water does pose a serious threat, not only to human life only but also to wildlife, particularly in the Dachigam National Park.

Militancy has added fuel to the fire. It has disturbed entire eco-system and the law of the jungle prevails these days. If this situation is not brought under control quickly the entire past of Kashmir will come to a sad end. From its seminal stages to the present state of civilisation, Kashmir has been famous for tolerance, mutual goodwill and humanism. The spirit of synthesis and assimilation is the key to Kashmiri culture. Kashmir has carved a niche for itself in the fabric of Indian culture. The present-day attempts to insulate her from humanism and synthetical modes of thinking cannot be overlooked as a mere aberration as these are aimed at destroying the essential genius of Kashmir.

Notes

1. In fact, the Vitasta is the lifeline of all Kashmiris. With the advent of spring, *vyth truvah* was celebrated by all the Hindus of the valley (at least until the beginning of militancy and the mass migration of Kashmiri Pandits from the valley in 1989) as the birthday of the river in March-April (*Chaitra*). On this day prayers were held on either side of the river and milk and flowers were offered to her. After sunset earthen lamps were lit and offered to the river after placing these on *shali*(paddy) grass rings. The day was commonly celebrated as *Durga Puja* or Kashmiri *sounth*.
2. Most probably *negin* is a corrupt form of the word Nagin, the snake goddess. Interestingly, the worship of the snake goddess was prevalent in the west. In this connection, a reference may be made to a charming statue of the snake goddess in ivory and gold dated sixteenth century bc from Minoa, the island of Crete in the eastern Mediterranean (Shali 1993:105).
3. The river is getting silted at an alarming speed. The liquid and solid wastes of the entire valley also go into it.
4. The famous Dal Lake, which was described by Abul Fazal as the edelight of the world, has shrunk from 24 sq km to 10 sq km. The fate of the other lakes such as the Wular and the Mansbal is no different. The Anchor and the Gilsar lakes are now gone.
5. The City Forest Project at Srinagar introduced by Jagmohan in his first term as governor of the Jammu and Kashmir state became the talk of the valley. He

developed a vast area of about 907 ha of land lying near Pari Mahal, Shankaracharya hill and Zeethyar hill into a sort of natural woodland within the metropolis of Srinagar. The entire complex became a haven for nature lovers, being restored to its pristine simplicity and charm. But all this was sacrificed for a sprawling artificial golf course which is being laid at the phenomenal cost of over Rs.10 crore. It seems that development is for the elites by the elites and there is not any attempt to enhance the quality of the common man's life. The Gulmarg Cable Car Project is yet another example of inappropriate development. In the execution of the project many fully grown trees have already been cut and more are expected to be butchered. Although the estimated cost of the project is placed at more than Rs.40 crore, there is hardly any chance of economic and financial advantage from it. An individual is supposed to pay Rs.100 and a family of five Rs.500 for the gondola trip. But how many families in India can afford this in addition to other expenditure on a trip to the state? I think it would be wiser to follow an independent and creative path, in harmony with the social conditions and the cultural heritage of the state, for its development schemes.

6. Besides, the current consumption of firewood in the state is believed to be 100 lakh quintals.

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