

Status of Bagmati River before and after cleaning campaign in Kathmandu valley

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Abstract

Nepal is a mountainous and land-locked country in the centre of beautiful scenery of the world. The country lies in the south of the Himalayan range and many rivers are originated from the Himalayas. The main source of rivers, are rain, snow and lakes. During summer, snow melts and due to this throughout the year our rivers are seen full of water. The rivers are originated from the north and mix up with the Ganges river. Undoubtedly, Nepal is rich in water resources. Water resource is one of the important factors among 5 elements which are essential for our life. So, the life of anybody can't be imagined without water. We have a large number of rivers and most of them are originated from the Himalayas. In the eastern part of our country, the Saptakoshi river flows, which is composed of seven tributaries: Indrawati, Sunkoshi, Tamakoshi, Dudhkoshi, Likhu, Tamar, Arun. Gandaki which has 7 tributaries flows in the middle of the country. The Karnali is famous in west. Besides these Mahakali, Babai, Rapti, Bagmati, Karnali, Bhadramati, Vishnumati, Rudramati etc. are the important rivers of Nepal. All these rivers have vast masses of water which need to be utilized. The Bagmati River originates high in the Shivapuri Hills near the village of Bagdwar some 15 kilometers north of the Kathmandu Valley. The river flows through the heart of the Kathmandu Valley and continues downwards through the southern plains to join the Holy Ganges in India. The Bagmati River passes by the holy Pashupatinath Temple, a religious symbol not only for the Hindus living in Nepal but also for devotees in India and other South Asian countries.

Keywords: Nepal, River, Bagmati, cleaning campaign, Pashupatinath temple

1. Introduction

Nepal is a country in Southern Asia that is found bordering China and India. It is a landlocked country and has a population of 26.4 million people. The country is a former monarchical government, but now it is a federal democratic republic. Nepal has a total area of 147,181 square kilometers. The landlocked country experiences different climatic conditions, such as extreme winter and breezy summer in the north and calm winter and subtropical summer in the south. Nepal experiences landslides, thunderstorms, and severe flooding. It also has several mighty rivers arising in the Nepalese Himalayas among them is the Bheri which is the longest and fully within Nepal^[1].



2. Kathmandu valley

Kathmandu valley was at pristine condition before some decades ago. People cultivated for their livelihoods. Most of the valley floor was used for agriculture and farming. After the onset of democracy in 2007, the valley witnessed rapid

immigration in past few decades. People who were engaged in farming have shifted to urban life now. Large sewerage pipes were added to the rivers as river tributaries to the river. The population of the 899-square kilometer valley has increased fivefold in the last 60 years, from 197,000 people in 1952 to 997,000 by the time of the 2001 census. Meanwhile, the built-up area has increased by 134%, from 24.54 square kilometers in 1989 to 57.32 square kilometers in 2006. Not only is the surface water the groundwater depletion also very high^[2].



3. Rivers of Nepal

Nepal is the 2nd richest country after Brazil in Water Resource. So, it has adequate amount of rivers, Lakes, and ponds to support this fact. Moreover, Nepal owns 6000+ Rivers and Streams. About 1000 Rivers are 11+ kms. The whole Length of rivers in Nepal is about 45,000 kms. The rivers of Nepal have the water storage capacity of 202,000 million cubic metres^[3]. The rivers of Nepal can be divided into 3 categories: 1st Class: These type of rivers continuously flows from the Himalayan Ranges. Gandaki,

Koshi and Karnali comes to this Category. 2nd Class: These type of river have its eye in the Mahabharata range and they don't always continuously flows like 1st Class rivers but these river don't dry. Some examples of this type of rivers are Mechi, Kankai, Bagmati, Trijuga, Banganga, Tinau, Rapti, Babai, Mohna etc. and 3rd Class: These type of river have its eye in the Chure hills. They increase in its volume during monsoon season and are completely dried in winter season. They are not useful for transport and hydropower but useful for irrigation purpose only. Some of its examples are Jamuni, Manusmara, Hardinath, Tilabe etc [4].

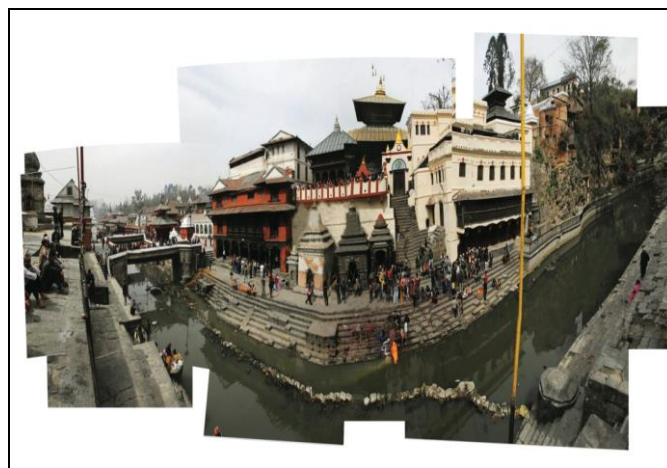


The river is used for religious ceremonies, as a water source, for crop cultivation, and for chemical and human waste disposal. The Pashupatinath Temple is the largest cremation site in Nepal with an average of 37 cremations a day. The temple is dedicated to Lord Shiva, the protector [5]. The word can be broken apart to explain its meaning: organism (pash), protector (pati), and lord (nath). Hindus believe that it is only through a sacred ritual performed at one of the Pashupatinath Temples that the body and spirit of the deceased can be released from the repeated cycles and struggle of birth and death that are at the root of the Hindu belief in reincarnation. This ritual allows the deceased to achieve nirvana, or oneness with the Supreme Being. It is no surprise, then, that the majority of temples, monuments, and shrines in the Kathmandu Valley are situated in close proximity to the Bagmati River banks. If possible, all Nepalese aim to make their ceremonial and festive washing in the river segment flowing past Pashupatinath Temple [6]. The temple area includes one large temple and 492 small temples situated in the vicinity of the Bagmati River banks.

4. Present Status

Every year, thousands of people from around the world, but especially Asia, come to worship at the Temple. The dead are brought to the temple to be burned at the most important cremation site in the Kathmandu Valley. Beyond its use in purification, whether of the living or the dead, the river itself is worshiped because it is said to bestow divine blessings on the people of the Kathmandu Valley. The Bagmati River runs through the Kathmandu Valley and separates Kathmandu from Patan. It is considered holy by both Hindus and Buddhists and is a source of water for drinking, washing, bathing and irrigating. The Bishnumati is the largest tributary of the Bagmati. It flows north to south past the foot of Swayambhu Hill and meets the Bagmati at Teku [7]. The Bagmati River has been crucial to

the Nepali way of life for centuries, yet only 10 percent of the river is actually water while the other 90 percent is sewage. Around 68 factories and nearly 2 million people pour industrial effluent and human waste directly into the holy river. Shyam Dangol from Tilganga, Kathmandu grew up in the area near the river. He said the water used to be very clean. He is among many Nepali people whose business has been affected by the pollution of the river. Dangol owns a cafe near the Bagmati. The restaurant used to be packed with customers looking for homemade hot food. Dangol now doesn't cook any food as customers don't come because of the strong smell of sewage the river produces [8].



5. Cleaning campaign of Bagmati River

Bagmati River has extensively been used as a medium of sewerage and waste disposal, for agriculture, aquaculture, energy, water supply, mining, and recreation. The needs of society is growing more than ever for water, however, recognition and addressing the impacts resulted due to large scale alteration of rivers to serve human needs goes missing.

Prior to expedition, secondary information about the overall river system is gathered from remote sense mapping, satellite imagery, hydro meteorological stations and previous studies on different aspects of the river system. During the expedition different methods were applied to study several aspects of the river and communities [9].

Surface water in the Kathmandu Valley is severely polluted by industrial effluence, domestic waste and untreated sewage discharged from residential areas. Around 40 million litres of waste water is generated daily in Kathmandu, and 80 percent of it comes from households. The Bagmati Cleaning Campaign plans to clean the river stretching up to 21 km from Baghdwar to Chobhar. "First, you have to do it yourself, then it inspires people.

The Bagmati River is yet to be witnessed clean and clear despite five years' relentless efforts to clean it. The Bagmati River Cleanup Mega Campaign which was begun five years ago on the same day Saturday has completed five years' journey but the condition is still not satisfactory and worrying. The cleanup campaign so far has been organized in about 45 different places and about 20,000 tons of waste has been extracted from the river and river side during the period. Thousands of participants were found involved in the campaign on every Saturday but the campaign is yet to be translated into effective result [10].



Narendra Raj Basnet, the 11th chair of the High Powered Bagmati Clean Up campaign also accepts the reality and says, "The river is still polluted and much more effort is needed to restore Bagmati River to its former glory." A total of 35 metric tons of waste was collected from the Kathmandu Valley based rivers and the Ring Road areas and managed Saturday. Under the Bagmati River Cleaning Mega Campaign which enters the 262nd week Saturday, a total of 10 metric tons of waste was managed from the Sankhamul areas. A candle lit ceremony will also be held in the evening today to mark the campaign's five-year completion ^[11]. Over 800 representatives from High Powered Committee for Integrated Development of the Bagmati Civilization, Nepal Army, Nepal Police, Armed Police Force, the Muktinath Development Bank, Reiyukai, Nyano Sparsha Foundation and Thakuri Society took part in the campaign, according to one of the campaigners Mala Kharel said. Bagmati Civilization civic Ambassador and actress Manisha Koirala, former secretary Kishor Thapa and Committee chair Narendra Raj Basnet had led the campaign Saturday. Various organizations like Bagmati Beauty Concerned Forum; Kanti Bhairav Gurukul; Pudasaini Friendship Society and Ramro Jorpati, Hamro Jorpati are also the contributors to the campaign focused on the area above the Guheshwari Area Tenle area. The cleanup campaign has reached 223rd week Saturday. Under the Rudramati River Cleaning Campaign, one metric ton of waste was collected and managed from the area in between to Ratopul and Kmalpokhari ^[12].



The campaign entered to 224th week and has been collected two metric ton of wastages from there today. Likewise, the Manohara River was also cleaned at the Jatibuti bridge area and one metric ton of waste was managed. The Gongabu Ganesthan area in Tokha Municipality-9 was cleaned in the 189th week of the Bishnumati River Cleaning Campaign with the management of eight metric tons of waste by over

200 people, said Chandra Dhakal. In the cleaning of the ring road area from Tribhuvan International Airport to Tilganga, over 450 people were participated and eight metric tons of garbage was managed from there. In the 58th week of the Alok Nagar Area in Kathmandu Metropolitan City-31, the Matrishakti Cleanliness Group conducted a public awareness programme on the importance of cleanliness of community, campaign coordinator Pramila Poudel told the RSS. Similarly, the Bafal area along the ring road area, ten metric tons of waste materials were collected and managed with the enthusiastic participation of locals. The campaign was launched from Solteedobato to Syuchatar, sad campaigner Tara Bahadur Kunwar. Though the awareness of cleaning the rivers and roads have increased, the result is not satisfactory. The regular contributors comment that most of the activities are only for cheap popularity which could not give effective result ^[13].

6. Conclusion

This study assessed current and future water pollution conditions of the Bagmati River within the densely populated Kathmandu Valley in order to explore alternative river pollution management options. The extent of pollution caused by releasing untreated sewage into the river system and the impact of the different wastewater treatment plants were determined. The simulation results show that the current practice of discharging untreated sewage into the river system is causing widespread pollution that becomes hazardous during drier periods ^[14]. The results also indicate that water quality is largely unsuitable for any practical use in between of Gaurighat to the Chovar area. An alternative approach to resolving the water pollution problem in Kathmandu Valley is to reduce wastewater and expand wastewater collection and treatment systems, which impact significantly on reducing the river water pollution of the valley. In summary, the severe deterioration of water quality in the Bagmati River requires action. It is essential to integrate river water pollution management in order to protect water quality and maintain ecologically and economically healthy urban development of the Kathmandu Valley ^[15].

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