



Asia

## IN FOCUS: From life-giving source to murky brown water, is there hope for Nepal's Bagmati river?



A farmer walks along the banks of the Bagmati River. (Photo: CNA/Matthew Mohan)



**Matthew Mohan**

09 Jul 2022 06:00AM | (Updated: 09 Jul 2022 06:00AM)



**KATHMANDU:** The stench was unavoidable.

Mr Bhakta Bahatur Khawas recalled nights where he would wrap a blanket around his face for some relief.

Metres away from his home in the Thapathali squatter settlement in Nepal's capital city of Kathmandu, the Bagmati river reeked.

"When I first came to live here, the water was black and the smell was bad. The smell would not go away, it would be there all day and all night. When the smell got very bad, we would pinch our noses (and get on with our daily lives)," said Mr Khawas, who has lived in the area for about 15 years.

---

"It would sometimes be difficult to sleep at night and we would cover our faces with our blankets when we sleep."

Fellow settlement resident Gopal Pandey recalled how waste from a nearby hospital was discharged directly into the Bagmati via a drainage pipe. Residents knew it posed a threat to the river and so they wrote a letter to the authorities, said Mr Pandey. The practice was eventually stopped.

"When the river was really dirty, the only option we had was to tolerate the smell. We had no other option," he said.

Down a flat, sandy path from Mr Khawas' hut lives Mdm Durgamaya Darji and her three children.

"When I first moved here, the water level was near to our doorstep. The quality of water was really bad, there used to be lots of plastic bottles, carcasses of animals and household waste in the river," she said.

Mdm Darji, 48, and other residents in the settlement use hand pumps to draw water from wells for some household needs. As the groundwater from these wells is not clean enough for consumption - a possible side effect from the rampant pollution of the Bagmati - they have to also buy drinking water.

"I feel very sad that I cannot use water from such a big source in front of my house. We are compelled to spend money to buy water," she added.

But the Bagmati wasn't always like this.



Mdm Durgamaya Darji sits outside her home in the Thapathali squatter settlement. (Photo: CNA/Matthew Mohan)

## A CLOSE CONNECTION

The Bagmati begins its journey in the hills north of Kathmandu. The river carves its way through the Kathmandu Valley where it is fed by a number of tributaries and flows through the Pashupatinath Temple, a UNESCO World Heritage Site of great significance for Hindus.

Further downstream, it meanders into southern Nepal and joins the Koshi River in India's Bihar province.

In the 1970s and 1980s, the river was an important source of water for those living in the Kathmandu Valley.

Freshwater ecologist Deep Narayan Shah, who is an assistant professor at Tribhuvan University's Central Department of Environment Science, recalled how it used to be integral to the day-to-day life of families like his own.

"We had cows, buffaloes, so we used to bring them to the river for water," he told CNA. "We visited the river for swimming, we also went to the river to wash clothes. So we were very close to this river because our day-to-day life was very much connected to the river."

Rather than rely on the city's limited water supply, Mr Madhukar Upadhya, a climate change and watershed expert, recalled how he too would use the Bagmati's waters to

do his laundry during his younger days.

This was a common practice, explained Mr Upadhya, who lived along a small tributary of the Bagmati.

Ramesh Upreti, a former CEO of the Pashupati Area Development Trust, whose role is to safeguard, maintain and develop the temple and the surrounding area, noted that the Bagmati was an integral part of the community and people's daily lives.

“During my childhood, I used to drink water from this river. There used to be a lot of beautiful fishes, and the water used to be used for irrigation,” he added.

Apart from daily living, the water in the Bagmati is also seen as holy for Hindus. Religious activities, rituals and rites are performed at temples along the river banks, with river water sometimes used. Cremations continue on the banks of the Bagmati until today.



Children walk along the banks of the Bagmati river. (Photo: CNA/Matthew Mohan)

Kathmandu resident Chaturchand KC recalled how he would take “ritual baths” in the river more than four decades ago.

“During (the) Bala Chathurdashi (festival) we used to come here and stay here throughout the night to worship and take a bath in the river. We used to take the water in our hands, bring it to the main temple and offer it to Lord Pashupatinath,” he told CNA.

## NO MORE A RIVER

The Bagmati's decline began with the proliferation of carpet factories in the Kathmandu Valley in the 1980s, experts said.

"There were a lot of carpet factories, and they were mostly located along the riverbanks. So all the waste generated - either liquid or solid - were directly discharged into the river," explained Dr Shah.

"After the carpet industry (grew) ... the colour (of the river) changed, and people could not use it, especially for bathing. There was also the wool produced that used to be lying on the sides of the water, so that looked dirty. It started to look ugly since then," added Mr Upadhyaya.

This pollution affected aquatic life and animals living along the river. Mr Upreti recalled how fish in the river started dying and monkeys in the Pashupatinath area became sick.

As the years rolled on, more people moved to Kathmandu in search of job opportunities. The mushrooming population meant rapid urbanisation and heavy industrial activity. Untreated sewage started flowing directly into the river.

"Due to the direct discharge of sewage and wastewater into the rivers without treatment, all the rivers in the valley have been turned into open sewers," said the Kathmandu Valley Environment Outlook in 2007.

"The degraded quality of both surface water and groundwater in the valley is due to sewage, industrial effluents, leachate from solid wastes, and infiltration of agricultural residue," said the report, which was produced by the International Centre for Integrated Mountain Development, the United Nations Environment Programme and Nepal's Ministry of Environment, Science and Technology.

It noted that in cities within the Kathmandu valley, about 21,000kg of domestic sewage was being discharged daily into the Bagmati.



The Bishnumati river, a tributary of the Bagmati river. (Photo: CNA/Matthew Mohan)

A 2015 report by Nepal River Conservation Trust, a non-profit organisation established by a group of river guides, noted that the portion of the Bagmati which flows through the Kathmandu city area was unsuitable for drinking and irrigation, did not meet the requirements to support aquatic life and exceeded the regulations for effluent discharge.

“The general take-home message was that in 2015, the river was already extremely polluted in the major areas of Kathmandu city. Only the river stretches that are in the forest areas, in the mountains surrounding Kathmandu, are clean,” said Dr Shah, who was part of the expedition team that conducted the research.

“The pollution that we generate within Kathmandu Valley affects (stretches) at least 60 to 80km downstream of Chobhar, the place from where the river leaves Kathmandu Valley.”

A follow-up study in 2017 resulted in mostly similar findings, said Dr Shah.

“If you have been to the river, it's no more a river ... This is like sewage. People don't like to move around, walk along the river because it smells bad,” he added. “It's not even pleasant to the eyes, or pleasant to the nose.”

In addition, the lack of water in the river means that whatever is dumped into the Bagmati can be stuck for a long time.

"In the past, the rain fell on the ground in the rice fields, and then the water seeped (into aquifers), and the aquifers were charged. All this water started to flow back again to the river channel. This means the river had continuous flow even after the monsoon ends," Mr Upadhya said.

This process is now mostly gone, he added.

"The amount of water used to wash away everything has not increased but the waste has increased many, many fold," Mr Upadhya explained.

As a result of the pollution of the river, religious practices have also changed.

"To worship the god Pashupatinath, every day worshippers must take water from the river. But due to heavy pollution, they are not doing that now. For that, (now) they use dug wells and from that they collect water and take water to the temple for worship," said Mr Upreti.



A view of Nepal's capital city of Kathmandu. (Photo: CNA/Matthew Mohan)

Those who do use the river water only take a little bit of it for symbolic purposes, added Mr Gaurishanker Parajuri, who is the current chief executive officer of the Pashupati Area Development Trust.

"I don't think it's now possible to do the (full) rituals here and I don't think the river water will be clean anytime soon," added Mr Chaturchand.

## THE FEELING OF GUILT

While the odds seem stacked against the river, there have been efforts to restore the Bagmati to its past glory.

As early as 2009, the Nepalese government drew up a five-year plan with the goal of a "clean, green and healthy Bagmati river system full of life and valued by all". Known as the Bagmati Action Plan, it zoned five portions of the river system, identifying specific issues to be tackled in these zones.

The Nepalese government also enacted the Solid Waste Management Act in 2011 to tackle waste-related issues.

Today, the High Powered Committee for Integrated Development of Bagmati Civilisation spearheads the government's efforts to clean the Bagmati.

It has a number of ambitious plans in place, including the construction of wastewater treatment plants, as well as building various sewer pipelines and planting green belts along the river banks.

"The main objective of this High Powered Committee is to keep Bagmati River and its tributaries clean by preventing the direct discharge of solid and liquid wastes to the river and to conserve the river system within the Kathmandu," said the committee on its website.

It did not respond to CNA's request for an interview.

Local citizens have also taken the initiative to clean up the river. One of these groups is Bagmati Safai Maha Abhiyan (Bagmati Clean-Up Mega Campaign), a movement that was started by a few organisations in 2013.

One of those involved in the early days of the campaign was Dr Bijay Man Shakya, a researcher who was part of Jeevan Vigyan, an organisation which provides meditation, yoga, psychological sciences and management development programmes, and was one of the first five groups involved in the river clean-up efforts.





Kishor Singh Shahi has been involved in a campaign to clean the Bagmati for close to a decade. (Photo: CNA/Matthew Mohan)

“I was thinking that it wouldn’t last long, but whatever, we had to start anyway. Let's give it a try ... We were amazed, there were lots of people on the first day, more than 300,” recalled Dr Shakya.

“I don't remember exactly how many tonnes of waste we collected. But it was a lot ... five or six trucks (worth), nine or 10 tonnes.”

And as more people joined, awareness of the issue increased, he said.

“It was changing the mindset, creating an awareness. So the main theme of this campaign was not (just) cleaning, but creating a mindset among the people,” he added.

Almost 10 years on from the first clean-up session, locals such as Kishor Singh Shahi continue picking up litter on stretches of the Bagmati on Saturday mornings.

“Before 2013, we saw the Bagmati river was very polluted, we hesitated to use the water (because) of things like skin allergies,” he explained. “When we came here to worship, we saw the river and felt like guilty people. So we (had to) take the initiative (to be part of the clean-up process).”

When they first started cleaning the Bagmati, Mr Shahi recalled how a number of volunteers would suffer skin diseases after coming into contact with the water. There

were some who also ended up vomiting, he noted.

He added that they would find dead bodies of animals by the river, such as dogs and cows.

"Now it is better than the past," Mr Shahi said. "I will continue to do this and I hope it will be clean in the future ... Kathmandu city's main river is the Bagmati, we have to clean this."

For the river quality to improve, Mr Shahi noted that there needs to be stricter enforcement of rules and regulations, as well as proper waste segregation in Kathmandu.

"The people living in Kathmandu have already realised that the status of the river reflects our status, our lifestyles. It's not acceptable and we should do something for it," added Dr Shah.

The Pashupati Area Development Trust is also doing its part to reduce the environmental impact of religious activities have on that particular stretch of the Bagmati.

In 2016, it opened an electric crematorium to provide an alternative option to using traditional wooden pyres by the river banks during the cremation process.

"We are very much conscious about the Bagmati river," said Mr Parajuri. "We have to develop a less polluted river for the sake of the community."

"I feel very bad that in the past the water was very clean and (we) could drink (from it). Now even the fish can't survive, I even feel very guilty that I am also one of the polluters of the Bagmati river. All of us have to make a joint effort (to save it)," added his predecessor Mr Upreti.



A water sample is collected from the Bagmati river. (Photo: CNA/Matthew Mohan)

Research also continues to be carried out on the Bagmati.

For one, a team from NEWRIComm, the philanthropic arm of the Nanyang Environment and Water Research Institute (NEWRI), is in the process of conducting a detailed analysis of the Bagmati's organic contaminants.

As part of the project, water samples will be collected from 18 different segments of the Bagmati river stretch (upstream, urban areas and downstream). The samples are then separated according to their chemical and physical properties for greater accuracy in analysis. Once completed, water samples are shipped to Singapore for further data analysis.

It is NEWRI's goal that the study findings will reveal the extent of water pollution and help to advocate for the preservation of the river.

NEWRI executive director Shane Snyder noted that preliminary findings six months into the two-year project have yielded "pretty remarkable results".

"We found that in certain sections, the water is highly toxic to human cells. I was very surprised at the amount of pharmaceuticals that are in that water, including antibiotics, which can lead to antibiotic-resistant bacteria," Prof Snyder explained.

Should that happen, it would be a "very dangerous scenario", he added.

## A DESTROYED SYSTEM

Experts remain divided on whether the Bagmati can be restored to its original state.

For Mr Upadhyaya, it is now about damage limitation for the Bagmati, he noted. Cleaning the river is possible, but restoring it is not, he noted.

"I'll not be shy to say it. Restoring is bringing it back to the situation that existed in the past, restoring it to the situation four decades ago when the river was still clean ... Can we restore it to that level? We cannot. We have destroyed the system that kept that (river) system alive," he said.

He explained how river water comes not just from its source, but mostly from surrounding areas or the river's watershed, which has also been significantly reduced over the years due to urbanisation.

And with the valley floor now being mostly sealed due to urbanisation, this makes it impossible for rainwater to permeate the ground.

"The state of the river now, what you see today, is after lots of efforts, of cleaning, providing treatment of sewage water. And this is what you have. Don't expect that your children will one day have a beautiful river with gardens around and clean water flowing. No, you can't. It is not possible."

Dr Shah noted that restoring the Bagmati will require huge financial expenditure.



Rubbish lines a street in Kathmandu. (Photo: CNA/Matthew Mohan)

“We have degraded the river (to) such a state that it will require huge financial requirements, and we'll need a lot of technology and a lot of time to bring it to the state it was before, a few decades back,” he said.

“There is (a) possibility but that will cost a lot.”

A number of issues need to be solved, he pointed out. This includes ensuring no sewage or waste enters the water and there is a better waste management system in Kathmandu.

“At the first stage, we need to control all those sources that pollute the river. So whatever liquid waste that is generated in the house or in businesses, corporate (settings) or anywhere, so that all needs to be piped and brought to a treatment plant,” explained Dr Shah.

“Only when the wastewater is treated properly, and it is acceptable to release in the river then it should be released. (For the) solid waste that has been generated, 100 per cent of it needs to be collected. The collection rate is low. If it is low, those waste will ultimately find a way to the river.”

It is also important that authorities look beyond merely beautifying the river, he noted.

"Are we simply thinking of water or thinking of the ecosystem? Because the river is not simply water, it's the entire ecosystem. And for functioning of the ecosystem, both

abiotic and biotic components should interact properly and that will keep the ecosystem going, to keep on functioning well," said Dr Shah.

"And if the ecosystem is functioning well, we will get the ecosystem services which are vital for our day-to-day life."

## **NOT IN MY BACKYARD**

While some have stopped disposing of their rubbish in the river, it remains a problem, say those who CNA spoke to.

"If you ask people, they all know - yes, we should not throw it (in the river). But where do they throw (it) then? You have to throw it out. It's like not in my backyard, it goes out to your backyard or wherever. So you want to remain clean but at the cost of somebody else," said Mr Upadhya.

"The river is a public place, nobody complains, everyone can throw it and no one is bothered about it. So that became a very easy spot."

"The major problem that we have seen - not just Kathmandu but the whole of Nepal - is out of sight, out of mind. Not in my backyard," explained Dr Shakya.

"If I throw it in the river, it goes somewhere, not my problem now. It's like whatever, finished ... It's like out of my sight, I'm clean, I don't care."



The Thapathali squatter settlement in Kathmandu, Nepal. (Photo: CNA/Matthew Mohan)

Back at the Thapathali squatter settlement where more than 100 families live, Mdm Darji recalled how people would arrive in the middle of the night to dump rubbish in the Bagmati.

"There have been a lot of rules made to stop people from dumping waste in the river ... But at night, there are people (from elsewhere) who come in motorbikes and big cars to throw their household garbage into the (opposite bank of the) river," she said.

Mr Pandey added that the settlement's residents do not dump their rubbish into the river. All biodegradable waste is fed to animals, while non-biodegradable rubbish is either burned or buried in the ground.

But residents that CNA spoke to were in general agreement that things have improved slightly over the years.

"Now it has gotten a lot better, it does smell now also but it's not as bad. They have blocked one sewage pipe that comes from the temple nearby so the waste from there does not directly mix with the river. So maybe that is why it has gotten better," said Mdm Darji.

"The quality of the river water in my opinion has improved by more than 30 per cent," added Mr Pandey. "Once, the river water was usable. But it was because us people (in Kathmandu) who polluted the water. It is upon us to make the river clean."

Having grown up in the squatter settlement, 22-year-old Binod Waiba summed up the current situation as "the best of the worst".

"It is not only the responsibility of people living by the river, but everyone in the city should be responsible. The direct effects are upon us (who live here), but indirectly it will affect everyone," he said.

"The Bagmati is a symbol of the identity of Kathmandu. It should have been preserved well but it was not."

*Source: CNA/mt*

---

## Related Topics

Nepal

pollution

sustainability

In Focus