

Restoring the Bagmati river By Bed Mani Dahal

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The issues on river Bagmati is hitting the national media and now it is becoming a challenge not only to the government, businessman, managers, scientists but also to all the people concerned with the myth and values of Bagmati river. The thing that is not understood till now is that everyone wants to have clean river and wants to contribute from their side, but it is not working. Why? The problem lies in its management. If we seek the government for its management, it will never work because the inefficiency of the government for the treatment of wastewater has already proven by the cases of Dhobighat and Guheshwari. The projects are launched but never completed even when spending billions of rupees.

None can remain silent when everyone is looking for the solution of polluted Bagmati river.

The construction of septic tank in each house would definitely help to improve the condition of Bagmati river but it is not possible as no one leaves even an inch of land while constructing houses. Therefore either collecting the sewage through pipelines and treat in a definite area or just let flow in the river are the two possible options in our context. The first option requires a lot of money and space as treatment plant. The second option will not help to improve the river condition so it seems that there is no way for the cleaning of Bagmati river. The case, however, is not exactly like that. There are alternatives for the solution of the problem. The main problem of the Bagmati river is untreated sewage, solid waste and industrial waste as well as the poor amount of water available in dry season. The problems can be overcome by the scientific design and treatment of polluted water flowing in the river itself with the efficient management system. For this three things are needed, which are scientists or wastewater treatment specialists, money and managers.

Modern sewage systems and sewage treatment plants are expensive and the capital cost of their installation is the main factor against their development, we need to focus on alternative purification system. Therefore I would like to focus on the concept of ecological or natural purification system. In every aspect, the nature has the capacity to purify its components in its own way and we need to increase its capacity if it is unable to do so just like in the Bagmati river.

For the treatment or management of Bagmati river, first of all, removal of organic substratum, mainly external materials like paper, plastics, rags, bottles, decaying materials etc--which are not of the river components--has to be done. Then to prevent further disposal of those materials, fencing of iron net is needed throughout the riverbanks. Then the amount of water in the river system has to be increased and that can be done by constructing check dams or barrier in different sections of the river. The large amount of water will remain in that section and the water can also spread throughout the

riverbank, which will help to increase space for high oxygen mixing in water. Because of check dams, the flow can be also checked and floating aquatic plants can be used for the improvement of treatment process. Those plants will help to intake organic pollutants and also help to increase the oxygen in the water. Certain species of higher plants such as *Mentha aquatica* produce compounds or antibiotics that can kill certain human pathogens so they can be introduced in the river system to protect people using the river water for bathing or for other purposes.

A large number of steep gradients and waterfall sites can be constructed after check dams or at possible places for the mixing of atmospheric oxygen to increase the rate of aeration and decomposition. Aeration removes odours and taste caused by decomposing organic matter, industrial wastes such as phenols and volatile gases such as chlorine. The slope surface of the already made dams or check dams can be introduced with stones or similar substance making the surface rough for maximum oxygen mixing and decomposition. Buffers and protection structures at the bank can help to improve the environment of river, which can be developed later into Riverbank Park. Plantation of certain fast growing plants at the Riverbank Park will also help to improve the quality of river water. Riverbank Park will definitely increase the religious and aesthetic value of Bagmati River in one way and protect the dumping of solid waste in the river in another way, ultimately improving the river water. During monsoon, the large amount of water and high flow will not make serious problem for the deterioration of river water quality.

Therefore, adoption of natural process of cleaning and restoration of Bagmati river is a suitable option. A recent article by renowned industrialist Binod Chaudhari and various comments by different environmental related organizations and public have sparked a keen public interest on the issue of Bagmati river. If they take the initiatives, public will also contribute the money needed for its scientific design, treatment and management. The environmental scientists, engineers, wastewater treatment and river restoration specialists are available in the country itself. So managers are lacking to take the responsibilities to organize all these things. If someone is willing to take this responsibility, we must all work together and not talk just for the sake of talking. If scientists, businessmen and managers work together, they can solve any problem in the country and solving the problem of Bagmati River will be a very simple one.

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