

Reducing nutrient pollution in the waterbodies of Delhi



THE SOURCE-TO-SEA CHALLENGE

Situated at the Yamuna River, one of the main tributaries of the Ganges River, Delhi is a major Indian city where the lack of wastewater treatment creates serious issues. In this metropolitan area of 30 million inhabitants, wastewater goes largely untreated due to the lack of sufficient infrastructure and outdated technologies that further exacerbate the problem. As a result, nutrients from

wastewater pollute surface and underground freshwater bodies within the region leading to significant eutrophication and biodiversity loss. This poses substantial risks to the health and wellbeing of both people and nature, particularly affecting prominent water sources such as Lake Najafgarh and the Yamuna River.

PROJECT PARTNERS

UN Environment Programme (UNEP)
Sustainable India Trust (SIT)

ADDRESSING THE S2S CHALLENGE

Seeking to address its wastewater challenges, Delhi has set an ambitious policy target to treat over 95% of wastewater of the city and to fulfill its ambitions, a variety of activities are being carried out: increasing sewer pipeline connections especially targeted toward informal settlements, piloting treatment techniques, increasing treatment capacity at current plants, and building new treatment plants.

Delhi's quest for better wastewater also involves non-state actors. UNEP and the Sustainable India Trust (SIT) implemented a project to support Delhi's efforts to reduce nutrient loads through a multi-pronged approach. The initiative focused on strengthening the knowledge base by assessing the recovery potential of nutrients discarded in wastewater and mapping current recovery and reuse practices. These practices were compared with available technologies, leading to the identification of appropriate technologies

suitable for use in Delhi. Additionally, an ecosystem health card was created to track improvements in the state and recovery of waterbodies, based on water quality parameters for nutrient loads. The project organized a stakeholder workshop with representation of local and national authorities, academia and NGOs. The aim of the workshop was to help build a shared understanding of the current situation by communicating the results of the project studies. At the same time the workshop provided room for discussions on next steps towards stemming pollutant flows.

In this phase, the project did not establish collaborations with other segments of the source-to-sea system outside of Delhi. In the next phase, the project plans to expand its focus to include nutrient pollution sources upstream from Delhi and examine the downstream impacts nutrients have along the flow of the Yamuna River as it reaches the Ganges River.



BARRIERS ENCOUNTERED AND SOLUTIONS

The main barrier encountered by the project was lacking communication and coordination between the stakeholders involved in addressing wastewater pollution, especially between scientists and policy makers. This meant that a shared vision between actors on how to address the issue was absent. The project worked to improve the dialogue between the stakeholders by sharing information and hosting a stakeholder workshop that brought together public officials from the local and national level, NGOs, academia, and the private sector to discuss the

project outcomes and identify a shared pathway forward.

Project activities were also affected by a short project cycle that was cut even shorter by the COVID-19 pandemic. However, a second phase of the project is currently being planned with an adjusted timeframe. This phase will build on the initial outcomes to enhance and update the policy frameworks meanwhile broadening the scope to include microplastics in wastewater.

ADDITIONAL RESOURCES

More details of the project: [How to reduce pollution in Delhi's waterways: \(unep.org\)](#)

MAIN LESSONS LEARNED

The project led by UNEP and SIT highlights that when taking source-to-sea action, it is vital to understand local context and the relationships between the different stakeholders to foster coordination and collaboration. In cases like this one, it may also require starting at the very beginning by establishing communication channels between the actors. UNEP and SIT worked toward this by facilitating information exchanges and a workshop where the relevant stakeholders could learn from each other, discuss potential actions, and find innovative solutions. This was especially important in bringing together public officials and scientists. These channels can be widened as synergies are identified and trust is built, eventually they can be formalized in governance frameworks.

Furthermore, it was very important for the project activities to build on the ongoing efforts of Delhi to address wastewater pollution. For example, the ecosystem health card helped to increase the knowledge available on how different activities contribute to the health of the waterbodies in a positive or negative way. Another example is the analysis of nutrient recovery technologies to provide recommendations to decision makers of which technologies adjust better to the local context to use this valuable resource.

More information: siwi.org/source-to-sea-platform