

## Reconnecting with rivers in the realm of today's urbanization: A Case of four Indian Rivers

Renouer avec les rivières au royaume de l'urbanisation : quatre cas indiens

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### RÉSUMÉ

Ce document analyse le scénario actuel de quatre rivières indiennes qui coulent principalement dans un contexte urbain. Ces études font partie de recherches approfondies menées pour le compte des organes directeurs respectifs, et prévues dans le cadre du Plan national pour la conservation des rivières élaboré par le Ministère de l'environnement indien. Ainsi, différentes villes indiennes ont réagi différemment à la présence des rivières, en fonction de leurs aspects socio-économiques et culturels inhérents, qui ont joué un rôle important dans la façon dont les personnes établissaient des liens avec les rivières. Par exemple, les espaces contestés dans la capitale financière de Mumbai ; les aspects culturels, religieux et institutionnels dans la ville de Nagpur dont l'importance est considérable sur les plans institutionnel et politique ; les connotations religieuses de Malegaon dont la population est principalement constituée de minorités ; et le développement récent de la ville de Karjat. Ce document s'interroge sur l'état des rivières urbaines indiennes et propose une approche globale pour parvenir à leur restauration, grâce à la prise en compte des aspects socioculturels inhérents ainsi que de l'écologie de la rivière. Il met également en évidence les défis que représente la création d'une approche intégrée de la restauration de la rivière. Enfin, il insiste sur la nécessité d'une gouvernance intégrée, d'un mécanisme institutionnel amélioré, sous la forme d'une coordination interministérielle et d'un partage des informations et des ressources, pour la mise en œuvre réussie des projets et la restauration effective de la quantité, de la qualité et de l'écologie de la rivière.

### ABSTRACT

The paper examines the current scenario of four Indian rivers, primarily flowing through an urban context. These studies are part of extensive research carried out for the respective Governing bodies and projected under the National River Conservation Plan (NRCP) drafted by the Ministry for Environment of India. Also different Indian cities have responded to the rivers differently based on its inherent socio economic and cultural aspects that have played an important role in the way people connected to the rivers. For example the contested domains of space in the financial capital of Mumbai, the cultural, religious and institutional connections in the institutionally and politically significant town of Nagpur, the religious undertones of Malegaon with a predominantly minority community settlement and recently developing town of Karjat. The paper enquires into the status of urban Indian rivers and proposes an inclusive approach towards restoration through incorporation of the inherent socio cultural as well as the river ecology. It also highlights the challenges for creation of an integrated approach to river restoration and stresses upon the need for integrated governance, better institutional mechanism in the form of interdepartmental co-ordination and sharing of information and resources for the successful implementation of projects and effective restoration of the quantity, quality and ecology of the river.

### KEYWORDS

River conservation, governance, culture, administration

## INTRODUCTION

The concerns' regarding our rivers is examined through four case studies of rivers in urban contexts in the state of Maharashtra in India, at different stages of development. The Mithi river of the densely urbanized financial capital Mumbai city, Nag river flowing through a developing urban city of Nagpur which is also the geographic centre of India, Ulhas river through Karjat a developing town close to Mumbai and Mousam river of Malegaon City which known for the minority settlement and is in its early state of urbanization. These studies are part of extensive research carried out for the respective Governing bodies and projected under the National River Conservation Plan (NRCP) drafted by the Ministry for Environment of India.

The paper explores the changing status of rivers with respect to these in context of the rising urbanization of our cities. It also looks into the ambiguities in the current governing system and regulatory methods which impact the river health and implementation process. It proposes an inclusive approach towards the changing trends, incorporating them into the development. Conclusively it also comments upon the challenges in implementing various schemes under the current administrative and institutional structure.

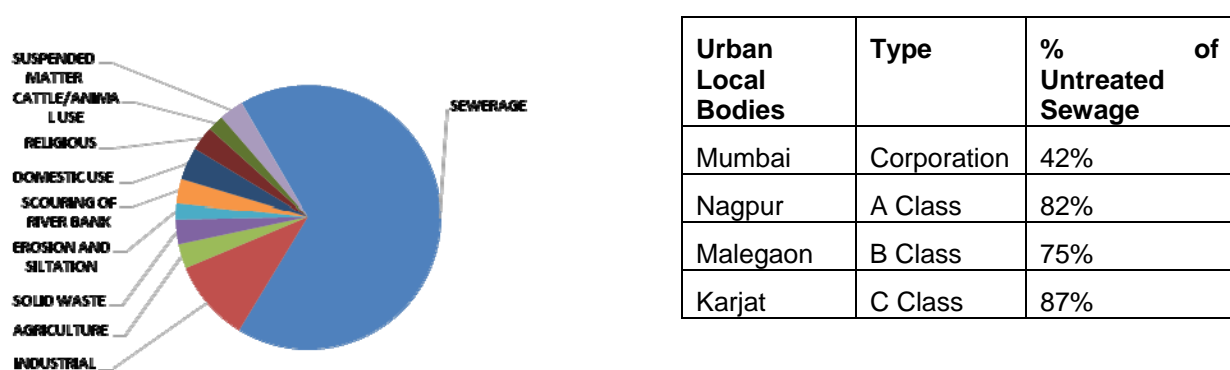
## METHODOLOGY

A comprehensive analysis of the rivers was carried out through maps, surveys, sampling and quantification along with an understanding of their growth patterns. Ecologically integrated spatial analysis of the environmental resources of each city was undertaken to establish the ecological status and identify the influencing factors. In addition an understanding of the administrative structure and Institutional mechanism helped in establishing the constraints for implementation under the NRCP.

## DISCUSSION

With the rate of urbanization of Indian cities at 48%, there is a significant growth of urban towns in India. Of this majority of the local urban bodies are situated along river fronts. The state of Maharashtra in India has about 20 river basins; the water of which is utilized for drinking, agriculture, industrial and domestic uses.

The pie chart clearly indicates the major factors contributing to river pollution, in the Indian context. The storm water and sewerage networks are the biggest contributors to the pollution of our rivers in urban areas. 70% of the water pollution in rivers is due to Sewage from Local bodies. More than 700,000 mlds of sewage is generated from Urban Local Bodies in Maharashtra itself, of which treatment is available for only 21%. Maharashtra is also one of the most industrialized states in India, of which about 80% of the industries are located near water bodies.



Urban Local Bodies	Type	% of Untreated Sewage
Mumbai	Corporation	42%
Nagpur	A Class	82%
Malegaon	B Class	75%
Karjat	C Class	87%

The Mithi river of Mumbai is highly polluted as it flows through most of its course through dense residential developments dotted with small scale industries; having little respite from the continuous inflow of pollutants. As opposed to Mumbai, the development plan of Nagpur city has a mix of landuses along the river. This creates many opportunities to allow for interactive spaces to be developed at nodes along the river. In the towns of Karjat and Malegaon, activities such as washing clothes, religious offerings, crematories, cattle washing, etc are commonly observed. Rather than barring such activities, incorporating them into the River front development schemes; with the necessary infrastructure incorporated into the design would ensure better utilization.

Each city has a close and unique association with the river, which has to be addressed in the river development. The role of the river as an important part of the natural drainage network of Mumbai city has to be critically evaluated for its environmental management. Cities like Nagpur and Malegaon have a strong religious connection with the river and hence the socio- cultural role of the river has to be addressed while redeveloping it.

The National River Conservation Plan (NRCP) has been drafted by the Indian Government which addresses the pollution, direct or indirect, in rivers in India. At the same time some critical issues related to the water flows remain unanswered. The local urban bodies are not only unaware of the monitoring and regulating requirements of the flows but also the decisions regarding these are taken in isolation. Such issues that are regional with respect to the larger river lengths but critical to the river ecology remain unanswered.

Also the State prescribes the minimum BOD required of the discharge water into the rivers. However these have been calculated considering many factors like volume and flow of water, which are given as blanket rules and do not always match ground realities. Thus maintaining the quality of water in the rivers remains an unresolved issue.

In addition, in the Indian context, there are various departments tackling specific aspects which directly or indirectly affect the health of the river. This becomes one of the main challenges in creation of an integrated approach to river restoration. The need for intervention has been established and engineering methods for restoration and implementation are also available. However departmentalization of responsibilities, lack of interdepartmental transfer of information and ambiguity of roles and responsibilities severely affects implementation.

## **CONCLUSIONS**

Every town has a different way of interacting with its river, influenced by its socio cultural background, physical structure and environmental scenario. Consequently, a single approach cannot be applied to all rivers, as these factors also play an influential role in the revival and rejuvenation of the river scheme. Each city has a close and unique association with the river, which has to be addressed in the river development. Also merely developing waterfronts as recreational and economic zones will not be successful if the waterfronts they are fronting are contaminated and unclean. There is a need for integrated governance, better institutional mechanism in the form of interdepartmental co-ordination and sharing of information and resources for the successful implementation of projects and effective restoration of the quantity, quality and ecology of the river.

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