



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Rejuvenation Of Morna River Precinct, Akola

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Abstract: The Morna River precinct in Akola, Maharashtra, holds significant historical, cultural, and ecological importance. This study examines the current condition of the river, evaluates environmental and infrastructural challenges, and proposes a rejuvenation plan. It emphasizes the socio-economic and ecological benefits of riverfront development while outlining sustainable urban planning strategies.

Index Terms - Riverfront, Sustainable, Rejuvenation, Ecological.

I. INTRODUCTION

1. Introduction

1.1 Overview of Akola City

Akola, a key city in Maharashtra, serves as the district headquarters and is part of the Amravati Division. Historically linked with the Berar Province under British rule, the city boasts numerous historical landmarks such as Narnala Fort, Akola Fort, and Balapur Fort. Covering an area of 5,431 km², Akola is bordered by Buldhana District to the west and by Washim District, which was part of Akola until 1999.

1.2 The Morna River

The Morna River, a tributary of the Purna River, traverses Akola, dividing it into eastern and western sections. It drains an area of 941.39 km², with its course spanning between 76°45'38" to 77°05'26" E longitude and 20°25'7" to 20°29'34" N latitude. With a length of approximately 113 km, the river is marked by meanders and natural cut-off loops that define its unique hydrological characteristics.

2. Climate and Geography

Akola experiences a predominantly hot and dry climate. Summer temperatures can soar to 47°C, while winter temperatures hover around 20°C. The region receives an average annual rainfall of approximately 750 mm. Geographically located at 20.7000° N and 77.0142° E, the area's soil supports a variety of crops, including cotton, jowar, soybean, tur, urad, moong, and bajra.

Climate data for Akola (1991–2020, extremes 1901–2024)													[hide]
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Record high °C (°F)	38.2 (100.8)	40.5 (104.9)	44.4 (111.9)	47.0 (116.6)	47.8 (118.0)	47.2 (117.0)	40.6 (105.1)	40.0 (104.0)	40.0 (104.0)	40.0 (104.0)	38.9 (102.0)	36.7 (98.1)	47.8 (118.0)
Mean daily maximum °C (°F)	30.0 (86.0)	33.2 (91.8)	37.4 (99.3)	41.0 (105.8)	42.4 (108.3)	37.5 (99.5)	32.2 (90.0)	30.8 (87.4)	32.3 (90.1)	33.8 (92.8)	32.4 (90.3)	30.7 (87.3)	34.5 (94.1)
Daily mean °C (°F)	21.9 (71.4)	24.9 (76.8)	28.7 (83.7)	33.0 (91.4)	35.3 (95.5)	31.9 (89.4)	28.3 (82.9)	27.3 (81.1)	27.8 (82.0)	27.4 (81.3)	24.8 (76.6)	22.1 (71.8)	27.8 (82.0)
Mean daily minimum °C (°F)	13.7 (56.7)	16.3 (61.3)	20.1 (68.2)	24.7 (76.5)	28.0 (82.4)	26.4 (79.5)	24.5 (76.1)	23.7 (74.7)	23.3 (73.9)	20.8 (69.4)	17.1 (62.8)	13.5 (56.3)	21.0 (69.8)
Record low °C (°F)	3.9 (39.0)	2.2 (36.0)	5.6 (42.1)	11.1 (52.0)	11.9 (53.4)	19.8 (67.6)	20.0 (68.0)	18.3 (64.9)	15.4 (59.7)	10.0 (50.0)	5.6 (42.1)	3.9 (39.0)	2.2 (36.0)
Average rainfall mm (inches)	10.6 (0.42)	5.5 (0.22)	14.2 (0.56)	4.2 (0.17)	10.1 (0.40)	146.8 (5.78)	215.0 (8.46)	181.8 (7.15)	137.7 (5.42)	42.5 (1.67)	11.8 (0.46)	3.1 (0.12)	783.4 (30.84)
Average rainy days	0.8	0.5	1.3	0.6	1.0	7.4	12.4	9.9	7.0	2.8	1.1	0.2	44.9
Average relative humidity (%) (at 17:30 IST)	37	27	23	19	21	46	67	72	65	47	45	41	42

(Source: [India Meteorological Department](#))

3. Socio-Cultural Aspects

3.1 Language and Dialects

Marathi is the primary language spoken in Akola, complemented by the local Varhadi dialect.

3.2 Folk Arts

Traditional performing arts such as Bhajan, Keertan, Shahiri, Powade, Gondhal, Bharud, Jogava, and Shayari are integral to the region's cultural heritage.

4. Connectivity

Akola benefits from robust connectivity via road, rail, and air:

- **Road:** National highways provide direct links to major cities like Mumbai, Delhi, Hyderabad, and Bangalore.
- **Rail:** The railway network ensures connectivity to key urban centers including Mumbai, Hyderabad, and Bangalore.
- **Air:** An airstrip in Akola accommodates small private aircraft and official visits.

5. Environmental Issues

5.1 Groundwater Level Variations

Data from well inventories indicate considerable fluctuations in groundwater levels, which are classified as follows:

- **Low fluctuation:** Less than 1.5 m below ground level (bgl)
- **Moderate fluctuation:** 1.5–3 m bgl
- **High fluctuation:** Over 3 m bgl

These variations are largely due to inconsistent rainfall patterns and excessive groundwater extraction.

5.2 Pollution and Drainage

Approximately 23 stormwater drains discharge untreated sewage into the Morna River. This discharge, combined with activities such as Ganesh idol immersion, laundry, and cattle washing, contributes to severe pollution—rendering the river unsuitable for ritual bathing and routine use.



LOCATION OF DRAINS ENTERING RIVER

.....● DRAINS

Illustration: Diagram depicting the drainage system along the Morna River (Source: Author)

5.3 Heavy Metal Contamination

Laboratory tests have identified contaminants such as iron, chloride, nitrites, and fluoride in the river water. These pollutants compromise water quality and pose significant health risks to the local community.

6. Built Environment and Land Use

6.1 Settlement Patterns

Informal settlements, including slums, have developed near the anicut and along the western bank of the river. While certain areas like Harihar Peth show unplanned development, other neighbourhoods such as Sindhi Colony and Geeta Nagar are laid out in a grid system.



Observation:

Analysis of activity patterns provides insight into the socio-economic dynamics and current land use in the area around the Morna River (Source: Author).

6.2 Public Spaces and Heritage Sites

Key landmarks include Maroti Temple, Anicut Temple, Hanuman Temple, Eidgah, and Asadgad Fort. Despite these cultural assets, the riverfront lacks sufficient public infrastructure to support tourism and community activities.

6.3 Infrastructure Challenges

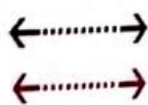
Bridges such as Kholeshwar Bridge, Lokhandi Bridge, and Stone Bridge are currently under strain. High water levels frequently obstruct Kholeshwar Bridge, and the overall network suffers from significant traffic congestion.

7. Proposed Rejuvenation Strategies

7.1 Conservation of Built Heritage

The strategy calls for the restoration of historical structures along the riverfront to enhance tourism. Improvements include refining the skyline and establishing visual corridors that promote better accessibility.

Movement Network Plan



HIGH INTENSITY CIRCULATION

LOW INTENSITY CIRCULATION



VEHICULAR



PEDESTRAIN

MOVEMENT NETWORK ANALYSIS TOURISTS AND RELATED FACILITIES :

Illustration: Diagram analyzing unplanned movement patterns to evaluate tourism potential and accessibility (Source: Author).

7.2 Environmental Restoration

Key proposals include the installation of wastewater treatment plants to curb pollution and the promotion of afforestation along the riverbanks.

Eicchornia at Akola city is becoming a serious problem as it forms barrier for aquatic life.



Source: Author

7.3 Development of Public Spaces

Recommendations involve constructing ghats, promenades, and recreational parks. There is also a plan to develop cultural hubs equipped with seating areas, event spaces, and pedestrian-friendly zones.

7.4 Improved Connectivity

Plans include the construction of new bridges to reduce congestion and the development of enhanced pedestrian pathways and cycle tracks.

7.5 Socio-Economic Benefits

The rejuvenation project is expected to spur revenue generation through commercial developments, urban marketplaces, and festival grounds, while also promoting growth in the IT sector and other economic investments.

8. Case Study: Ramkund, Nashik

The redevelopment of the ghats in Nashik serves as a successful example of riverfront revitalization. Similar strategies, integrating religious, cultural, and tourism elements, can be tailored for the Morna River.

9. Conclusion

Revitalizing the Morna River precinct presents a unique opportunity to transform Akola into a sustainable and vibrant urban centre. By integrating environmental conservation, heritage preservation, and infrastructural enhancements, the project is poised to improve the quality of life for local residents and drive economic growth.

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