









# Student Thesis Competition (STC) Season 5 on "Re-imagining Urban Rivers"

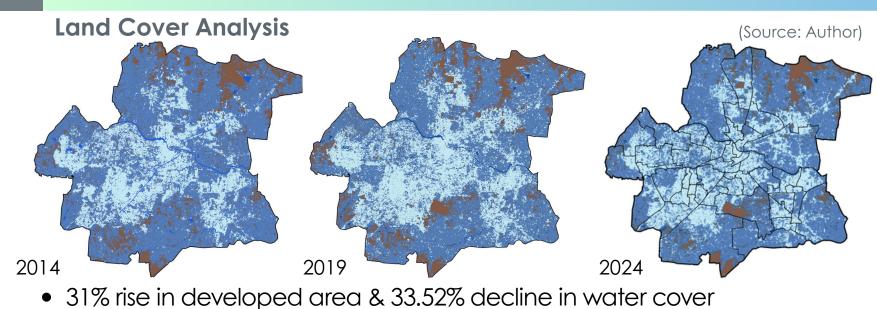
Re-imagining Godavari River through the lens of ecosystem services, focusing on sustainable development of Nashik

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### **PROLOGUE**

"The healthy rivers underpin economies" with this seed idea, the project is envisioned to integrate a conservatory approach for water-related ecosystem services in a holistic manner of urban development, capitalising on their synergies to achieve long-term water security and resilience. Using a mixed-method approach—combining spatial LULC analysis, stakeholder surveys, and multi-criteria valuation key ecosystem services (provisioning, regulating, and cultural) were mapped and assessed.

## 02 PROBLEM & PURPOSE



& Planning Response

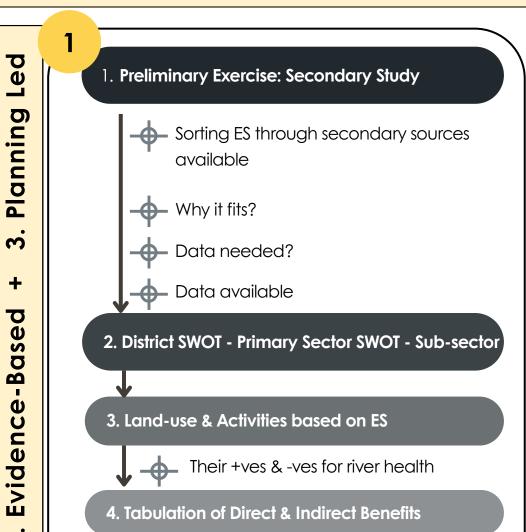
• Gap Between Cultural Significance

- Acc to MPCB Over the past decade (2011-2023), the WQI declined from 133.44 to 35.01, as observed at key ghats in Nashik city (MPCB data).
- High Stress-Low Intervention Zone



AIM: TO FACILITATE RIVER-SENSITIVE URBAN PLANNING OF THE GODAVARI RIVER INFLUENCED ZONE IN NASHIK THROUGH WATER-RELATED ECOSYSTEM SERVICES.

Primary Study



. Categorisation of benefits into total economic

. Indicators Identification for river-related ES

Weight the criteria Validation Stakeholder's Survey, Citizen's Perception Surveys **Experts Validation** Key Informan Interviews

Ranking ES to find out prominent one

Criteria Setting for Ranking

Scoring ES using matrix system

Final Ranked list of ES

TO IDENTIFY ECOSYSTEM SERVICES PROVIDED BY THE GODAVARI RIVER IN NASHIK. PHASE 1: OBJECTIVE 1 PHASE 2: OBJECTIVE 1 **Outcomes: Outcomes:** Site Study / Secondary Analysis - Prominent Ecosystem Services -Presence of Ecosystem Services -Dominant Land Use and -Present status through KPIs -Perception listing from different gorups

LULC Analysis 2. Supervised Classification Post-Classification Comparison to identify degradation hotspots or zones of landuse transformation Overlay this with ES layers & MPCB identified pollution pockets . Mapping of supply areas & flow 8 beneficiaries 1. Final Zone Prioritization **Outcomes:** - Final Area Delineation -On-ground Identified Issues in Nashik

PHASE 3: OBJECTIVE 2 TO ANALYSE THE LAND USE AND LAND COVER AROUND THE GODAVARI RIVER, AND THE **RELATIONSHIP WITH THE HUMAN ACTIVITIES ON A** PROMINENT TYPE OF ECOSYSTEM SERVICES.

05 PROPOSALS & RECOMMENDATIONS

MANAGEMENT STRATEGIES FOR PILGRIM FLOW AND ACTIVITY ZONES

**PHAS** 

Dharmaveer Sambhaji

Raje Bhosle Udyan

Entry to

Ghat

Ecosystem Services Concentration in the delineated prioritised area **Ecosystem Services Type**  Provisioning Services Cultural Services Regulating Services ecommendations Nagar Nashik (NMC) Shalimar **Policy** 00 Cultural Ecosystem Services Concentration in the delineated prioritised area **Proposals Ecosystem Services Type** • Ritual Use / Spiritual Value Sacred Structures • Festival / Gathering Use Aesthetic Value Tourist Use / Recreation 3 Heritage / Mythological Connection **BJECTIV**  Informal Social Use Art / Cultural Signage Presence Traditional Knowledge / Local Experts 0 Educational / Awareness Value 4

Public

Vacant Land

Takle Nagar

Towards Juna

Adgaon Naka

**DESIGNATED ZONES FOR EACH ACTIVITY** 

**ENHANCING CULTURAL ECOSYSTEM SERVICES** 

#### PRIORITY ISSUE IDENTIFIED

#### **OVERCROWDING CRISIS AT KUMBH MELA SITE - PANCHAVATI**



- No pre-registration or crowd control mechanism
- Lack of resting zones/temporary infrastructure
- Infrastructure damage
- Poor traffic management
- No designated parking & vendor zones

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#### 2015

• 60 lakh pilgrims

1 Crore Visitors

### PILGRIM PROJECTION FROM KUMBH MELA

**Daily average attendance:** 

10,000,000 pilgrims = 137,000 PILGRIMS/DAY 73 days

• Prayagraj = 30 lakhs

Nashik = 20 lakhs

= 166,700 PILGRIMS/HOUR (Bathing occurs 6 am - 6 pm)

Scaling to Ramkund zone:

Ramkund precinct may handle 10% of overall pilgrimage crowd (others spread across satellite sites).

17,000 PILGRIMS/ HOUR MAY ARRIVE FOR RITUALS AT THE RAMKUND STRETCH.

Total Required Area:  $17,000 \times 2 = 34,000 \text{ sq.m}$ 



Geo-**Enabled** Interactive Trail App



**Pilgrimage** Trail Network



Ramkund Real-time Integrated Upstream Flow Regulation **Water Level** Protocol (I-UFRP) **Monitoring System** 



Godavari Eco-**Ecosystem Services Ghat Retrofit** Scorecard

Panchavati Ghat (2)

Ramkund

Goda Ghat

Nashik



**Detention** basins/pond for **Urban Runoff** Management



**Polluter Pays** 



Nimani

**Bus Stand** 

Exit from the Ghat

**Eco-Performance Based Tax** Rebates/

Incentives



Zone A: Ritual Activity Zone

Zone B: Observation Zone

"No-Drying Mandate" in DCRs



Zone D: Vendor Relocation

Zone & Utility Support

Zone C: Rest & Circulation Area

Pre-Monsoon **Assessment Protocol: Annual Ramkund Water Security Audit**