

Developing urban water ecosystem sustainability indicators: water ecosystem health assessment

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The Magnitude of the Problem.....

- Against a demand of $2.985 \times 10^5 \text{ m}^3 \text{ day}^{-1}$ for drinking, sanitation, other domestic uses and industrial units, only about $2.385 \times 10^5 \text{ m}^3 \text{ day}^{-1}$ or 79.9%, is available.
- About 15 to 25% available water is lost in transit due to leakage from pipes and, only 64% of the demand is met.
- The water supply is constrained by natural water scarcity, conflicting demands, development, spurt in population growth, dilapidated infrastructure, allocation among users in time, aquifer recharge capacity, contamination and land subsidence.

Urban Water Ecosystem Indicators

- 1. Cities have complex systems that deliver vital goods and services to a large, dense population, being in that sense comparable to ecosystems.**
- 2. Urban water ecosystems (UWE) perform functions like water supply for production and cleaning, removal of fecal matter, handling of wastewater, drinking water provision, prevention of flooding by drainage water etc.**

Ease of Living

Ease of living comprise
four pillars:

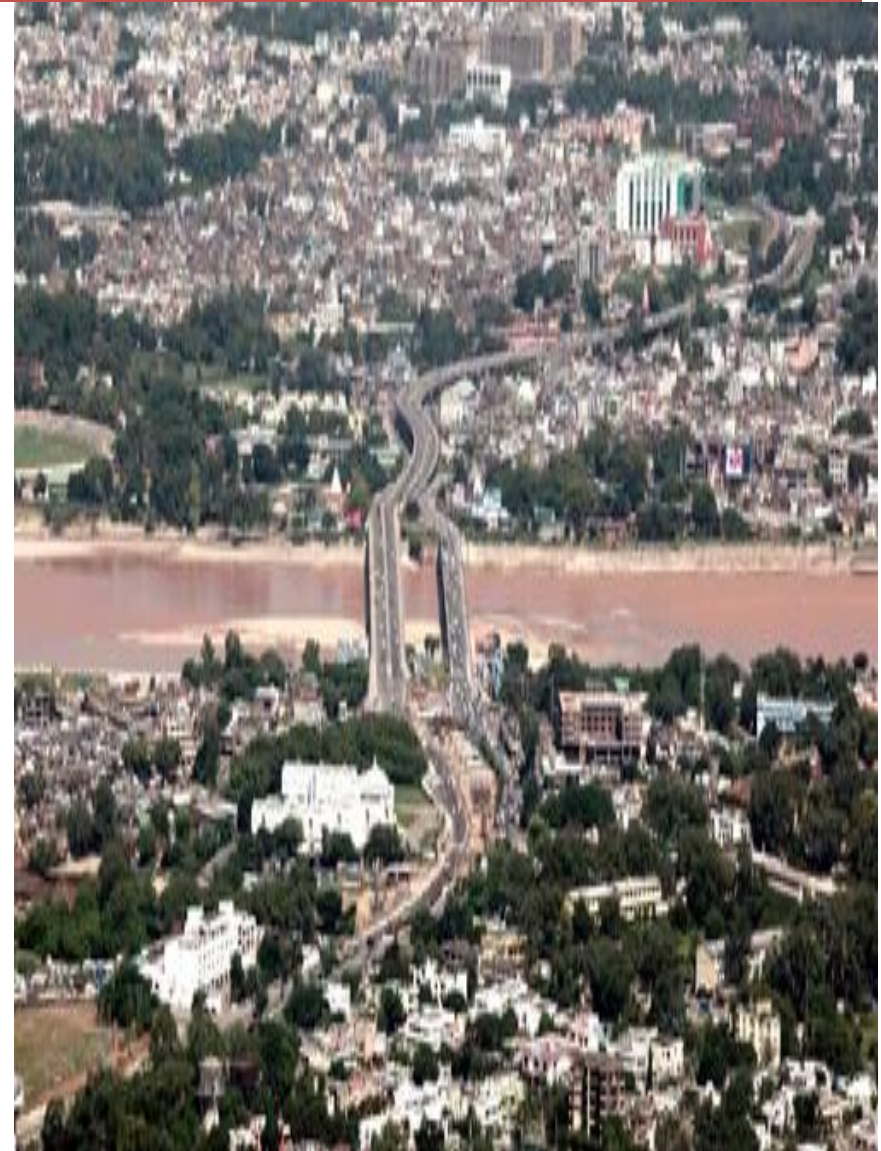
➤ Institutional

➤ Social

➤ Economical

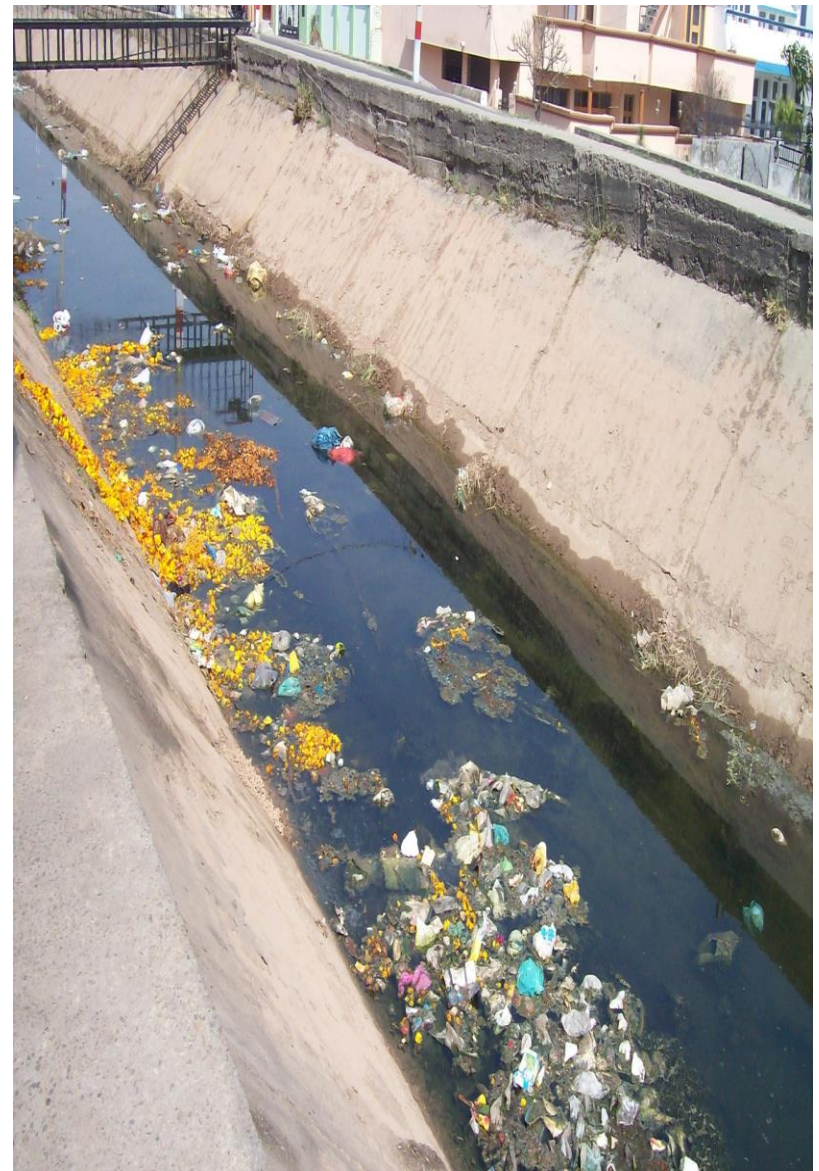
➤ Physical

These are further sub
divided into 15
categories and 78
indicators



Major factors considered for UWE indicators

1. Status (source and quantity of water bodies),
2. Quality (extent of pollution)
3. Dimensions of sustainability (environment, society and economy),
4. Economical,
5. Biophysical (natural resources),
6. Resource and material, and,
7. Pressure (effects considered as negative e.g. population increase).



Development of Urban Water Ecosystem Indicators

- 1. System boundaries,**
- 2. Objectives,**
- 3. Time frame of projects,**
- 4. External pressure and,**
- 5. Needs and interest of stakeholders.**

Water Ecosystem Sustainability Indicators for Jammu City

- (i) socio-economic or threat to water resources due to societal needs**
- (ii) meteorological,**
- (iii) environmental, as droughts,**
- (iv) resilience or ability of the system to maintain water resources despite major disturbance and stability under stress conditions**
- (v) policy domain and management, including developmental works, spatial and intergenerational equity and relationship between people and policy makers.**

Thank you very much

