

# Climate Crisis and Environmental Sustainability in India's Tier 2 cities

**CITIZEN  
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Better cities, better lives

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## **Credits**

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# About Citizen Matters

Citizen Matters is India's leading civic media platform. It serves as a knowledge exchange with insightful reports on critical urban issues, ideas and solutions for cities, diving deep into issues that affect our quality of life, including water, commute, public safety, air quality, governance, education, environment, local economy and more. We bring together civic reportage, data and diverse voices to empower citizens to build sustainable, equitable and liveable cities.

Our work is supported by **Oorvani Foundation**, a non-profit trust that works on open knowledge platforms for civic engagement and community revitalisation. Oorvani Foundation also supports **Open City**, an urban data platform that enables data-driven decision making.



# Project Description

On 9th August 2021, the United Nations-established Intergovernmental Panel on Climate Change (IPCC) published its report on emerging climate change research from across the globe. Terming the report as “code red for humanity,” UN Secretary-General António Guterres said the report was a warning to the world that we are, in fact, in a state of crisis.

According to the report, global earth temperatures for the past four decades have seen a gradual increase, with each decade warmer than the last. What is staring us in the face is the reality that climate change is entirely human-made, and that this is a wake-up call for policymakers the world over.

The impact of this crisis on cities cannot be ignored. India has witnessed unmitigated climate disasters this pandemic year, and the need of the hour is an urgent reevaluation of urban management.

Over the latter half of 2020, Citizen Matters commissioned a **series of articles**, supported by Climate Trends, to look at climate change and environmental sustainability in Tier 2 towns like Bhubaneswar, Chandigarh, Shimla, Rishikesh and Varanasi. Subsequently, Citizen Matters organized an online roundtable discussion on February 10th, 2021, titled **‘Climate Crisis and Environmental Sustainability: Lessons for Tier 2 cities’** to discuss solutions.

This brief summarises the learnings from the reports, the key challenges and the recommendations by experts to tackle them.

# The need to shift focus to tier 2 cities

## Air Pollution and Rising Temperatures

At the centre of the discourse around urbanisation, policy and environment are metropolitan cities like Delhi/NCR, Mumbai, Chennai and Bengaluru, which have larger populations and financial leverage when compared to tier 2 cities and towns.

Air Pollution is invariably associated with Delhi/NCR, discussions around water crisis are more often than not Chennai-centric, while waste and mobility stories are focussed on Bengaluru. But as our series showed, many of our Tier 2 cities and towns suffer from the same problems and have the same challenges to overcome.

Some reports, like Shimla's effort to leverage its sunny days to make a **switch to solar energy**, were encouraging, but others, such as the government's approach to '**development**' in Himalayan cities, or the problem of **toxic air** in cities on the Indo-Gangetic plain, evoked anxiety.

## Poor Air Quality

A **report** by Rishabh Shrivastava, detailed the pollution crisis in Varanasi, placing it in a larger context of rising pollution levels in the Indo-Gangetic Plain (IGP). Varanasi in 2017 alone witnessed, in the whole year, only 7 days of good air quality. This is reportedly exclusive to IGP cities.

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*One of the most alarming research shared by the Energy Policy Institute at the University of Chicago (EPIC) in 2019 was that people residing in IGP are losing 7.5 years due to air pollution. The study noted that pollution levels have increased by 72% from 1998 to 2016.*



**Rishabh Shrivastava**

Independent Researcher, Writer and  
Communications Professional

# Rising temperatures and heat island effect

Chandigarh, once a cluster of 58 villages, has seen a rise in minimum temperatures in the last three decades, as **reported** by Raj Macchan in, “Almost every family in Chandigarh has two cars. This is what it has cost the city.”

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*The temperature rise in Chandigarh has been more than the global average. As per a continuous study since 1880 by NASA’s Goddard Institute, Earth’s average global temperature has increased by 0.80 degrees Celsius during the last 100 years. In India, as per the Centre for Science and Environment, the annual mean temperature has risen by 1.2 degrees Celsius since 1901.*



**Raj Machhan**

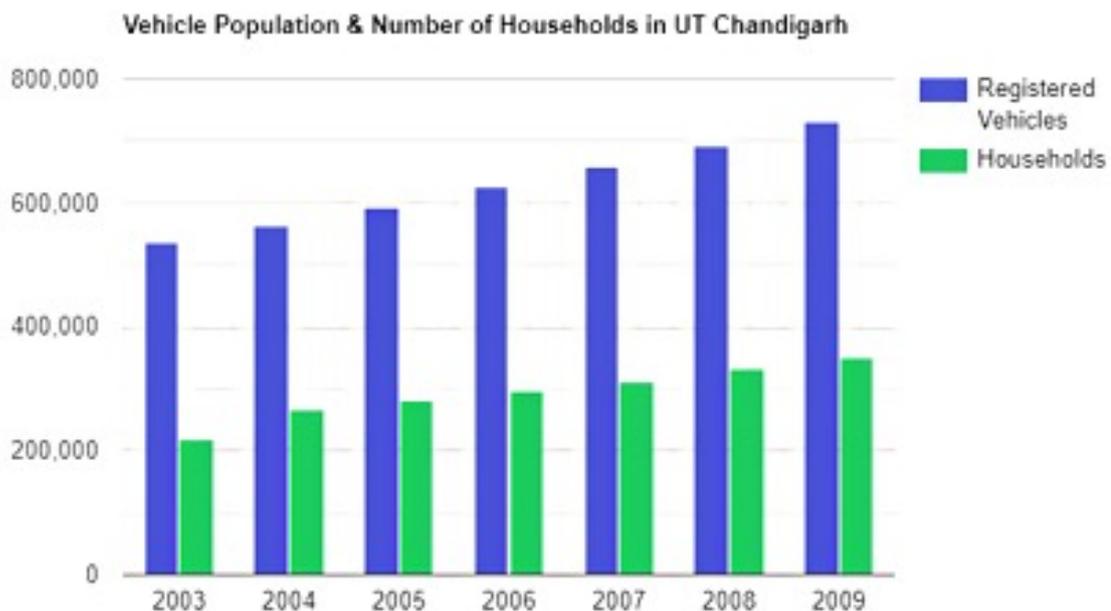
Senior Independent Journalist and Online Media Specialist based in Chandigarh, formerly with The Indian Express

In the past seven decades, the average minimum temperature in Chandigarh has risen by 1.8 degree Celsius. Experts attribute this to the city's design planning that was based entirely on concrete and tar, and additionally, its unmanageable number of vehicles.

# Rising temperatures and heat island effect

The reports from Varanasi and Chandigarh introduce serious challenges for experts and citizens alike. The contribution of vehicles to air pollution is not new and poses more dangers to cities each year, but there is little to no intervention by states.

The picture emerging is an ideal image, that the state governments and municipal corporations are concerned for the environment, but effective implementation of ideas is lacking. There are more vehicles on the road and a minimum of two cars per middle-to-upper-class family, leaving little room for cycling or other alternative forms of transportation, and even less for clean air.



*The average minimum temperature in the city has risen by 1.8 degree Celsius over the last seven decades, caused primarily by lack of public transport and loss of green cover.*

Discussions on air pollution in the country are episodic, writes Shrivastava, and depend on extreme events like the annual increase in pollution in the Delhi-NCR region. Cities like Varanasi that are densely populated are not able to handle the problem of industrial waste that cause toxic foam amongst other things.

# Polluted water bodies and falling groundwater tables

Similar to the water pollution in Varanasi, the city of Ludhiana has struggled with toxic waste in the Sutlej river. A **report** by Raj Macchan, titled, “Dozens of studies, hundreds of crores but Buddha Nullah pollution still threatens Ludhiana” outlines how much of the waste dumped in the river travels through the Buddha Nullah, a 14-km stream that runs through Ludhiana, picking up untreated sewage and other forms of waste on the way.



Sutlej which originates in Tibet flows through Himachal Pradesh and Punjab covering a distance of 1450 kilometres, before crossing over to Pakistan. In what has long been described as the Land of the Five Rivers, the Sutlej has been the main source of water for irrigation and drinking purposes in its 440-km journey through Punjab, writes Macchan.

“

*Climate change may be happening due to carbon, but climate change speaks through water.*



**Mridula Ramesh**  
Founder, Sundaram Climate Institute

The depletion of groundwater - used for drinking water and agriculture - is not a new concern and is now a global discussion. The collection of waste in the Sutej river, for example, is directly impacting groundwater levels, risking the entire population. A two-part report by Lalit Pattajoshi outlines Bhubaneswar's **sewage system problem**. Pollution in the Daya river and **erratic rainfalls** in the area are contributing to the city's already poorly managed water system(s), and as reported by Pattajoshi, the city urgently needs water conservation measures.

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*One of the earliest planned cities in the country, Odisha's capital even today lacks a comprehensive sewerage system with treatment facilities. As a result, residents of 115 villages living along the lower end of Daya river are afflicted by several diseases, particularly cancer, as they are forced to use its water polluted by effluents and sewage generated by Bhubaneswar's 11 lakh plus population.*

**Lalit Pattajoshi**

Senior Journalist based in Bhubaneswar

## Lack of urban planning

Shimla, once celebrated for its green slopes, is now a popular resting place for hoteliers, builders, tourists and homeowners. Slowly disappearing are the views that grabbed the attention of large crowds from cities, and residents are bearing the brunt of irresponsible town planning and management.

Ashwani Sharma's **reporting** on Shimla takes us through the town's haphazard building policy, and some measures taken to prepare for extreme climate events.

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*Shimla has seen a rise in illegal constructions across its periphery, adding risks to lives and the environment. "The state government's Town and Country Planning (TCP) officials admit that many buildings don't meet safety and environment parameters, and have come up in complete violation of the plans approved by the department or even without getting the building maps approved.*



**Dr Ashwani Sharma**

Senior Journalist and Columnist for the Indian Express and other leading publications

# Lack of urban planning

Urban planning has become more challenging as states struggle with climate change. There is still more ignorance and misinformation than there is action, which is either slowing down environmental/sustainable development or is resulting in more damage.

Rishabh Shrivastava **wrote** about the Char Dham Highway, in “*Char Dham highway project will only add to urban woes*”, an ambitious 900 km all-weather highway project in Uttarakhand, already contested by experts who have campaigned against it. The Char Dham is **now back at 10m width** after being allowed by the Supreme Court on December 14, 2021.



Pic: Uttarakhand Tourism Development Board

The biggest concern around this project is the geological consequences to an area already vulnerable and still recovering from major climate disasters in the past. Uttarakhand's environmental governance, if not fixed, could open the door to uncontrollable disasters.

This total neglect of environmental issues in urban planning is, unfortunately, not exclusive to Uttarakhand, and from big cities to small villages there are repercussions deeper than our governments currently realise.

# Root causes

## Awareness and media narratives

- The mainstream discussion does not include citizens' everyday lives that are inextricably linked to climate change.

## Poor governance

- A bureaucratic approach offers unclear accountability and makes it harder to locate who is responsible for what.
- Many projects have been executed through partnerships with international agencies to look at carbon footprint and climate change. However, these are executed episodically and the outcomes are forgotten once a project is over.

## Sustainability not in election agenda

- Measures like sustainability are not given much attention because they're not electorally resonant.
- Politicians don't care. For example, in Shimla, just before the municipal elections, they passed a law that regularises all illegal construction, when the city is already under so much stress. "There are some 30,000 illegal constructions in Himachal Pradesh and 40% of them are in Shimla."

## Lack of data

- Lack of data on the public domain makes it difficult to ascertain the carrying capacity of Himalayan towns and take appropriate measures.

# Root causes

## Lack of a scientific or evidence-based approach to development

- This has been evident in several cases: from the Char Dham Project to the waterfront development around the rivers in the region. In the cities, and in the Himalayan region at large, there was not enough importance given to facts cited and studies done by environmental experts and activists.
- Former Shimla Deputy Mayor Tikender Panwar quotes three recent studies done by the state Disaster Management cell in 2015 on hazard risk, vulnerability assessment, city resilience index and rapid visual survey of the buildings.



*Rampant cutting of hills, using heavy machinery, can trigger widespread and irreversible damage to the sensitive Himalayan ecology.  
Pic: Ayush Joshi*

## Cities and citizens taking action

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*The good news is that there are a lot of ongoing experiments. So if you travel to smart cities in India, you'll find e-rickshaws are operating, solar panels on rooftops are present. In Bilaspur, I found a company that was charging e-rickshaws at a rate lower than LPG using solar panels. In Davanagere, there is a project where a local puffed rice manufacturing district was becoming low carbon by installing solar mounts. So these are new opportunities where these technologies are getting cheaper, and people are adopting them.*



**Ankit Bhardwaj**

PhD Student in Sociology at New York University  
and Adjunct Professor of Environmental Studies

## Cities and citizens taking action

Some measures are trying to reconvert Shimla into a green city, even sustainable. Sharma reported the city's move to solar energy in a bid to move to low-cost, alternative energy practices. “This is our 2021-22 mission for a green city project for which Rs 6 crore has currently been set aside out of Rs 2,900-crore worth smart-city projects,” said Pankaj Rai, then Commissioner, Shimla Municipal Corporation and head of the smart city projects. “The rest of the funding – Rs 12.85 crore – has been sought from the Centre.” writes Sharma. The city is set to invest more in this project long term.

Provoked by unseasonal rainfall in Himachal, the state has found there are advantages to early warning signs of climate events, and in the past, they've helped towns prepare for emergencies. In light of this, the state is preparing a first of its kind automatic ‘Early Warning System’ in risk-prone Parvati valley in Kullu district. This is the state's attempt to introduce a sustainable solution to the area's erratic climate events and inspire participation by locals. Based on the response in Parvati Valley, it'll be implemented in other districts.



Aravalli Bachao Citizens Movement organised a protest against the waste-to-energy plant in the vicinity of Aravalli hills. Pic: Aravalli Bachao Citizens Movement

# What is the way forward?

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*It is imperative for states to have their own decentralised policies and push cities to adopt those, but also giving them the freedom to modify those as per their own context. India is a vast country; across its regions, the situations vary, contexts vary and therefore solutions must be local.*



**Swati Singh Sambyal**

Municipal Solid Waste Management Expert;  
UN-Habitat India

# What is the way forward?

## Government

- Local bodies should highlight changemakers doing significant work on climate change and the environment
- Push Climate Science as a key area of research and knowledge
- Setup a common and open data platform with diverse information related to the environment, for data-driven decision making
- Make public consultation a part of the budget, mandate and job for these projects

## Citizens

- Be more involved in environmental issues
- Set up city-based social watch groups and lobby for effective implementation of the 74th amendment
- Keep pressuring the govt and businesses to keep social equity in mind
- Make issues like sustainability part of the election agenda

## Media

- Bring focus on critical environment topics, with deep dives on specific issues, presenting objective and well-researched narratives

# Special thanks

**We are grateful for the contributions of the group of experts, thinkers and professionals who offered their insights to a valuable discussion.**

- Ankit Bhardwaj – PhD Student in Sociology at New York University
- Dr Anoop Nautiyal – Founder, Social Development for Communities (SDC) Foundation
- Dr Anvita Pandey – Coordinator and Scientist, Centre for Ecology Development and Research
- Dr Ashwani Sharma – Senior Journalist and Columnist for the Indian Express and other leading publications
- Jagadananda – Member, Standing Committee (CSOs) at the NITI Aayog; Member Secretary, Centre for Youth and Social Development (CYSD)
- Jaskirat Singh – Environmental Activist; Founder, Naroa Punjab Manch, a citizens group working on cleaning up the Buddha Nullah in Ludhiana
- Kanchi Kohli – Researcher, Writer, and Campaigner working on environment, forest and biodiversity governance in India
- Mridula Ramesh – Founder, Sundaram Climate Institute
- Raj Machhan – Senior Independent Journalist and Online Media Specialist based in Chandigarh, formerly with The Indian Express
- Rishabh Shrivastava – Independent Researcher, Writer and Communications Professional
- Ritu Hooja Shandley – Educator with over 20 years of experience
- Rutul Joshi – Architect-Urban Planner, CEPT University
- Dr Shashi Kant Sharma – Senior Journalist; Professor, Department of Journalism and Mass Communication, Himachal Pradesh University
- Swati Singh Sambyal – Municipal Solid Waste Management Expert; UN-Habitat India
- Tarun Sharma – Co-Founder, Nagrika
- Dr V Vinoj – Assistant Professor, School of Earth, Ocean and Climate Sciences, IIT Bhubaneswar
- Meera K – Co-Founder, Citizen Matters
- Satarupa Bhattacharya – National Editor, Citizen Matters
- T R Gopalakrishnan – Consulting Editor, Citizen Matters

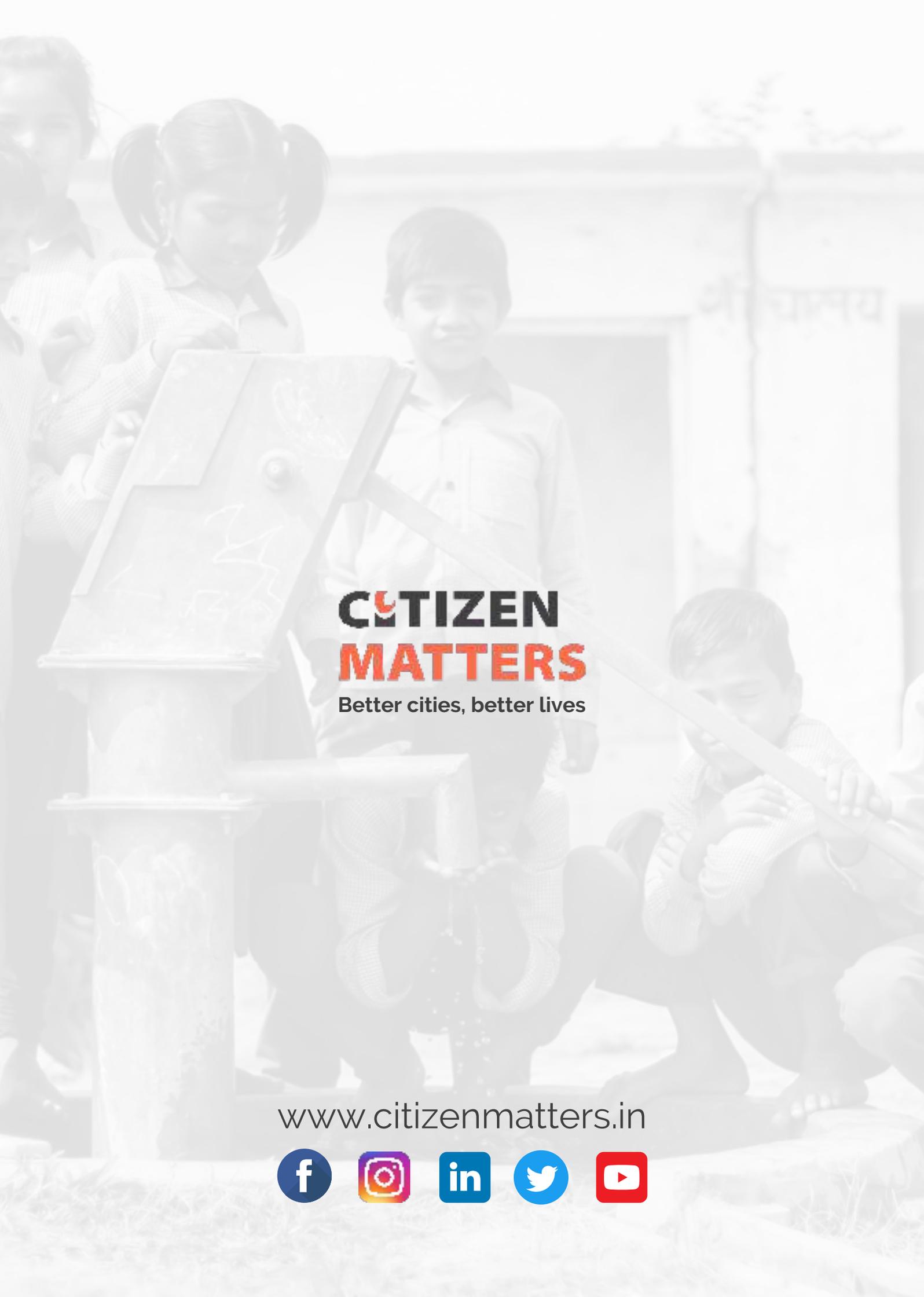
# Readings

A **series of articles**, supported by Climate Trends, that examine and analyse climate change manifestation and preparedness in non-Metro cities, while also exploring possible mitigation opportunities.

- Smart city Bhubaneswar yet to get proper wastewater treatment infrastructure ➤
- Where can Bhubaneswar's rainwater go? ➤
- Dozens of studies, hundreds of crores, but Buddha Nullah pollution still threatens Ludhiana ➤
- State-of-the-art early warning system to save more lives in Shimla, Kullu, Manali during extreme climate events ➤
- Shimla's haphazard building policy a recipe for climate disaster ➤
- Almost every family in Chandigarh has two cars. This is what it has cost the city ➤
- Solar energy drive to make Shimla a 'green' city ➤
- Char Dham highway project will only add to urban woes ➤
- Varanasi's horrible air quality typical of issues faced by cities of Indo-Gangetic plain ➤
- What's causing climate risks in our smaller cities and towns? ➤
- Battling the climate crisis in Tier 2 cities: What can we all do? ➤

Watch the full recording of the online round-table discussion here:

**[Climate Crisis and Environmental Sustainability: Lessons for Tier 2 cities](#)**



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