



SPECIAL ISSUE ON CLIMATE VOLUME I

CLIMATE JUSTICE

VOICES FOR CHANGE: CLIMATE JUSTICE, AND A SUSTAINABLE FUTURE FOR INDIA



Green Features
September 2025 Edition

Editorial Team:
Mr. Rajgopalan P.V.
Mr. Vijay Pratap
Ms. Nazmin Saikia
Mr. Anthony Das

Reimagining
Sustainable
Development Through
an Indian Lens

The Survival of Human
Inhabitants Is at Risk
: Is This Climate
Injustice?

Bonus: CSAT English
Worksheets & Mathematical
Reasoning Sheets for
Competitive Exams



Edition on Climate Justice

**Innovedica Foundation
Centre for Inclusive Education, Delhi**



September 2025

Editorial Review:

Mr. Rajgopalan P.V.

Mr. Vijay Pratap

Ms. Nazmin Saikia

Mr. Anthony Das

Contributors:

Vikas Arora

Anthony Das

Nazmin Saikia

Jimmy George

Snigdha Devi

Narayan

Arpita Priyadarshini

Kalpana Sahoo

Alphina George

Design and Layout:

Nazmin Saikia

Green Features welcomes the reproduction and dissemination of the contents of this publication, provided due acknowledgement is given to the source.

Green Features

Tel: +91 9999062208

Email: saded.greenfeatures@gmail.com

URL: <https://greenfeatures.blogspot.com/>

Disclaimer

Every effort has been made to ensure the accuracy of the contents of this publication. Unless Green Features provides or expressly grants prior written consent, no part of this publication may be reproduced, distributed, or communicated to any third party. Green Features does not accept any liability if this publication is used for any purpose other than that for which it is intended, nor to any third party in respect of this publication.



TABLE *Of* CONTENTS



- 01 About
- 02 Editorial

ARTICLES

- 03 *From Rio 1992 to 2025: Reimagining Sustainable Development Through an Indian Lens - Vikas Arora*
- 04 *Climate Communication & Youth Power: India's Green Revolution Begins at Home - Nazmin Saikia*
- 05 *The Survival of Human Inhabitants Is at Risk: Is This Climate Injustice? - Anthony Das*
- 06 *The Evolving Landscape of Global Climate Governance: Outcomes of COP29 and Implications for India - Snigdha Devi*
- 07 *SDGs and Climate Conditions in India: A Call to Action - Alphina Chathan Jimmy & John Pallan*
- 08 *Environmental Justice - Kalpana Sahoo*
- 09 *Rural Sustainability and Climate Goals - Arpita Priyadarshini Mishra*

CSAT - PRACTICES SETS

- 10 *CSAT English Worksheet*
- 11 *CSAT Mathematical Reasoning Worksheet*
- 12 *Creave Corner - Youth Artwork Contribution*
- 12 *Activites for climate*



About



ABOUT THIS EDITION

The August 2025 edition of Green Features is dedicated to climate change — the defining challenge of our time. It explores the urgent need for action on rising global temperatures, extreme weather, biodiversity loss, and climate inequality, with a special focus on youth-led advocacy, renewable energy innovations, sustainable farming, and community-based adaptation. By combining climate-focused research with educational resources — including CSAT English worksheets and mathematical reasoning practice — this issue seeks to inform, inspire, and equip readers to be active participants in building a sustainable and equitable future.

ABOUT GREEN FEATURES

Green Features is an initiative dedicated to exploring environmental sustainability, social equity, and community resilience through research-driven articles, educational resources, and creative storytelling. By bringing together voices from experts, grassroots changemakers, and citizen reporters, Green Features serves as a platform for knowledge exchange, policy dialogue, and skill development in areas ranging from climate action and green technology to rural livelihoods and cultural preservation. Each edition aims to inspire informed action and foster solutions that address the interconnected challenges of climate change, social issues, and sustainable development.

ABOUT INNOVEDICA FOUNDATION

The Innovedica Foundation is a non-profit, innovation-driven organization committed to empowering individuals and communities through education, research, and skill development. Rooted in a mission to bridge knowledge gaps and encourage sustainable practices, the Foundation designs and implements projects that combine creativity, technology, and social engagement. From promoting climate literacy and spoken English programs to supporting women's livelihoods and youth leadership, Innovedica works to build inclusive platforms that enable people to adapt, thrive, and contribute meaningfully to the world around them.



Editorial

"The Earth provides enough to satisfy every man's needs, but not every man's greed."
— Mahatma Gandhi

With these words, Gandhi reminds us of a timeless truth: sustainability is not just about resources, but about responsibility. As we bring you this climate-focused edition of Green Features Magazine, we reflect on how greed-driven consumption and unchecked exploitation have brought us to the edge of a climate crisis — and how collective responsibility can guide us back.

This issue delves into climate change, environmental justice, and sustainable development, drawing lessons from global dialogues while anchoring them in the Indian context. Our contributors explore the impacts of climate change on rural livelihoods, governance, and community resilience, while also offering insights into what can be done to safeguard our shared future.

To nurture awareness and action, we have combined research-driven articles with educational tools, including CSAT English worksheets and mathematical reasoning practice, empowering learners to build not only knowledge but also skills for a better tomorrow. In addition, this edition carries a call for youth creativity — inviting students to use art and imagination to re-envision a greener planet.

Through words, numbers, and colors, we aim to inspire our readers to see themselves as active stewards of the Earth. For it is in our classrooms, homes, and daily choices that the seeds of sustainability truly take root.

Together, let us choose balance over excess, and responsibility over indifference.

Ms. Nazmin Saikia
Researcher and Editor

From Rio 1992 to 2025: Reimagining Sustainable Development Through an Indian Lens

By Vikas Arora

As we reflect on World Environment Day 2025 under the banner “Beat Plastic Pollution”, we are reminded that environmental degradation is no longer a distant threat. It is a present crisis. Yet, beyond the numbers and protocols lies a deeper moral inquiry: what kind of relationship should human civilisation have with nature?

This is not a new question. Long before the Rio Earth Summit of 1992 laid the groundwork for modern environmental diplomacy, India’s ancient texts offered a profound ecological vision. The Vedas described the universe as composed of the **Pancha Mahabhoota—five gross elements**—interconnected in harmony. This wasn’t mere mythology; it was philosophy rooted in sustainability.

India, rooted in the wisdom of its ancient texts, has always nurtured a tradition of ecological consciousness. The Vedas invoke nature not merely as a resource, but as a divine presence—“*Do not harm the water and the flora; Earth is my mother, I am her son.*” This Vedic worldview lays the foundation of what modern environmentalists now call **Ecological Democracy or Harit Swaraj**. It resonates powerfully with the idea of “*Vasudhaiva Kutumbakam*”—the world as one

family—reminding us of the interconnectedness of all life on Earth.

Gandhi: The Earliest Environmentalist

Well before the international community convened in Stockholm (1972) or Rio (1992), Mahatma Gandhi had sounded the alarm on unsustainable consumption:

“The Earth has enough for everyone’s needs, but not for everyone’s greed.

M.K. Gandhi

” Environmental movements in India like *Chipko* and *Narmada Bachao Andolan* found philosophical and strategic strength in Gandhi’s emphasis on simplicity, decentralisation, and harmony with nature.

Rio Earth Summit 1992: A Global Turning Point: The 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro was a landmark moment that redefined humanity’s relationship with the planet. It produced key international agreements:

- Agenda 21: A blueprint for sustainable development.
- Rio Declaration: 27 guiding principles on environment and development.
- Convention on Biological Diversity (CBD)

- United Nations Framework Convention on Climate Change (UNFCCC)
- Forest Principles: Guidelines for sustainable forest management.

The concept *of Sustainable Development*—meeting present needs without compromising future generations—entered global policy vocabulary.

From Rio to Paris to 2025: Key Milestones

 1997 – Kyoto Protocol

- Binding emission reduction targets for developed countries under the UNFCCC.

 2002 – Johannesburg Summit (Rio+10)

- Reviewed implementation of Agenda 21.
- Shifted focus toward poverty eradication and water and sanitation.

 2012 – Rio+20 Summit

- Produced “The Future We Want” declaration.
- Introduced the concept of the Green Economy and reinforced Sustainable Development Goals (SDGs).

 2015 – Paris Agreement

- Landmark treaty under UNFCCC aiming to limit global warming to below 2°C, ideally 1.5°C.
- Emphasized Nationally Determined Contributions (NDCs).

2015 – UN 2030 Agenda for Sustainable Development

- Adopted 17 SDGs and 169 targets addressing climate, inequality, health, and justice.

 2021–2025 – Climate Emergency Era

- IPCC Reports warned of irreversible tipping points.

- COP26 (Glasgow) and COP28 (Dubai) tried to accelerate climate finance, phase-down coal, and push for net-zero.

Plastic, Pollution, and Planetary Limits

The 2025 theme, “*Beat Plastic Pollution*”, is a reminder of how even seemingly “modern” materials have turned hostile. From oceans choked with microplastics to rivers poisoned by industrial effluents, plastic pollution embodies the core crisis of modernity: excess without foresight.

India, with its tradition of reuse, modest consumption, and ecological reverence, must not replicate the mistakes of the West in the name of development.

The Great Divide: Development vs. Sustainability

Rio exposed the longstanding rift between the Global North and South.

Southern/Developing countries, especially in the Southern Hemisphere, argued that environmental constraints could not be imposed on them while they were still struggling with basic development. They demanded equity, technology transfer, and climate finance.

Northern/Developed nations, having already exhausted much of the planet’s carbon budget, called for emission cuts and green transitions—often without acknowledging their historic responsibility.

This “Green vs. Growth” debate continues to haunt every climate negotiation, including COP26 in Glasgow and COP28 in Dubai. The North-South divide remains unresolved.

"Developmentalism" and Geopolitics:

The New York Times' coverage of the summit highlighted how the summit was framed within the context of geopolitical

rivalry and conventional "developmentalist" approaches, which often prioritized economic growth over environmental concerns. The coverage also focused on the interactions between political leaders and largely ignored the concerns of non-governmental organizations and environmental groups.

"Green" vs. "Growth":

The central dilemma was how to reconcile the desire for economic growth in the Southern Hemisphere with the need for environmental protection and sustainable development. This created a tension between the immediate needs of the poor and the long-term goals of the rich, with the South often feeling that the North wanted to keep them in a state of poverty while focusing on environmental concerns.

The Rio Earth Summit (1992): A Turning Point

- **North-South Divide:**
The summit brought to the forefront the unequal distribution of wealth and resources between developed and developing countries, often referred to as the North-South divide.
- **Sustainable Development:**
The summit's core theme was sustainable development, recognizing that economic growth and environmental protection must be pursued together.
- **"Brown Agenda":**
The summit acknowledged the unique environmental challenges faced by urban areas in developing countries, often referred to as the "brown agenda," including pollution, inadequate infrastructure, and poverty.
- **Developing World's Concerns:**

Developing countries expressed concerns that the North, having already industrialized and benefited from resource extraction, was now imposing environmental restrictions that would hinder their development.

- **Criticism of the World Bank:**

The World Bank has faced criticism regarding its lending practices and the impact of its projects on the environment and local communities.

The Rio Summit and Beyond

- **"Our Common Future":**
The summit built upon the recommendations of the **1987 Brundtland Report**, which emphasized the interconnectedness of environment and development.
- **Rio+20:**
The 20th anniversary of the Rio Earth Summit, known as Rio+20, reiterated the commitments made in 1992 and aimed to set new benchmarks for action.

India's Climate Trajectory: From Principles to Practice

India has walked a careful, principled path. While it contributes less than 4% of global CO₂ emissions, it shoulders the burden of being home to over 1.4 billion people vulnerable to climate impacts.

Key national steps include:

- **NAPCC** with eight National Missions.
- **Enhanced INDC targets** for 2030, including 40% energy from non-fossil sources.
- **India's Net-Zero Target** by 2070.
- **National Hydrogen Mission** and the **450 GW renewable energy goal**.

- Transition from **BS-IV to BS-VI** emission norms.
- **‘LiFE’ Movement** (Lifestyle for Environment): A global Indian initiative promoting sustainable lifestyles.
- At COP27 and the G20, India echoed its civilizational theme: “*Vasudhaiva Kutumbakam*” — One Earth, One Family, One Future.

The Sundarbans: A Living Laboratory of Climate Change

Nowhere is the climate crisis more visible than in the **Sundarbans**, the world’s largest mangrove forest and a UNESCO World Heritage Site. Rising sea levels, saline water intrusion, and intensified cyclones have jeopardized its unique ecosystem.

Local communities face displacement, livelihood loss, and health hazards. The region's degradation isn't just a local tragedy—it's a global warning.

As a biodiversity hotspot, carbon sink, and storm buffer, the Sundarbans are critical to both environmental and human survival. Yet they continue to receive fragmented, underfunded conservation attention.

The Future We Must Choose

The **Brundtland Report (1987)** declared, “*Our Common Future*”, but we are now hurtling toward “*Our Common Peril*.”

Sustainability is not merely an economic or ecological choice—it is a civilizational test. India, with its philosophical grounding, demographic weight, and democratic traditions, is uniquely positioned to lead the global South into a new era of climate justice.

We must advocate for:

- **Loss and Damage Funds** to compensate vulnerable nations.
- **Stronger regional cooperation** through platforms like BRICS.
- **Localization of SDGs**, especially in ecologically sensitive zones.
- **Integration of indigenous knowledge systems** into climate adaptation.
- **Reform of global institutions** like the World Bank to prioritize green equity.

Conclusion: Reclaiming Ecological Swaraj

Gandhi once said, “*What we do to the environment is a reflection of what we are doing to ourselves.*” As we approach a decisive decade, let us revisit not only Rio’s resolutions but also India’s ancient civilizational wisdom.

Sustainable development cannot be an export from Western capitals; it must rise from native soil, informed by ethics, equity, and ecology.

The age of extractive growth is over. The age of *Ecological Swaraj*—where the planet’s health is placed at the centre of progress—has begun.

Suggested Readings for GS Paper 3:

- Brundtland Commission Report (1987)
- India’s NDCs and Climate Action Tracker
- IPCC AR6 Synthesis Report (2023)
- SDG India Index (by NITI Aayog)
- “Loss and Damage in the Sundarbans” – Zero Carbon Analytics

UPSC Related Important Questions:

- Discuss the importance of the Sundarbans delta and the challenges it faces due to climate change.
- Analyze the impact of rising sea levels and increased cyclone frequency on the Sundarbans ecosystem.
- Examine the role of mangrove forests in carbon sequestration and climate change mitigation, focusing on the Sundarbans.
- Evaluate the effectiveness of conservation efforts in the Sundarbans in the face of climate change.
- Discuss the socio-economic impacts of climate change on the communities living in the Sundarbans.
- Analyze the significance of the Sundarbans as a UNESCO World Heritage Site and its role in biodiversity conservation.
- What are the challenges to the sustainability of the Sundarbans and what measures can be taken to address them?
- How does climate change affect the livelihoods of people in the Sundarbans?
- What are the key differences between the Sundarbans and other mangrove ecosystems?
- What is the significance of the Ramsar recognition of the Sundarbans?
- Conflict between developed and developing countries regarding support for mitigation ?
- Do you agree that the occurrence of climate change is due to excessive exploitation of natural resources by the developed countries?
- Challenges for India in Achieving Net-Zero Emissions by 2070
- Discuss the characteristics of the monsoon climate and explain the factors that influence its behaviour?

Climate Communication & Youth Power: India's Green Revolution Begins at Home

By Nazmin Saikia

In an era where climate change threatens not only ecosystems but education, health, and livelihoods, **India's youth are stepping up.** Their voices echo in classrooms, courts, social media feeds, and community halls. They're not just raising awareness—they're **changing the climate of communication itself.**

At **Green Features**, we believe that effective change starts with education, storytelling, and local action. So let's explore how India's young minds are reshaping climate communication—and how we can support them.



Why Climate Literacy Is the First Step

A recent **UNESCO report** highlighted a stark reality: climate change may cost

schoolchildren in vulnerable regions up to **1.5 years of learning.** Rising temperatures, floods, and storms are no longer abstract—they're impacting education and aspirations.

India's **National Education Policy (NEP) 2020** responds by mandating climate and sustainability education across all levels. Yet, implementation still faces roadblocks—particularly in teacher training, rural reach, and resource access. According to the 2023 UNESCO-MECCE report, climate education is still uneven, especially outside metro cities.

But there's hope. The **next generation is not waiting.**

Youth Movements That Are Making a Mark

Fridays For Future India

Inspired by global momentum, Indian students have mobilised across Delhi, Dehradun, and smaller towns—holding strikes, demanding action, and educating peers. **Ridhima Pandey**, often called India's Greta Thunberg, started climate protests at just 11 years old. (Photo Source- <https://sabrangindia.in/climate-activism-web-site-fridays-future-india-restored/>).



Climate RISE & Indian Youth Climate Network (IYCN)

From solar workshops to policy dialogues, these platforms nurture **action-based engagement**. IYCN alone has reached 10,000+ youth across six states with climate projects on waste, water, and energy. (Photo Source- <https://iycn.in/>).



Campus Sustainability Clubs

Across India, colleges now host eco-clubs organising plogging drives, tree plantations, and community cleanups. Initiatives like **Pune Ploggers** and **Climate Cardinals India** show that local language, regional stories, and digital content can create a massive impact.

Storytelling, Social Media & Citizen Science

What makes these movements effective?
Communication.

- Social platforms like Instagram and WhatsApp are now tools for climate education.
- Localised campaigns are creating ripple effects—think: farmers tracking rainfall, communities logging air quality.
- NGOs like **Climate Cardinals** translate scientific information into regional languages—bridging the information gap for rural and semi-urban youth.

This is what behavioural change looks like when **citizen science meets storytelling**.

Institutions Supporting Young Changemakers

India's youth are not alone. Several national and global programs provide structure and support:

- **UNESCO's CCESD** initiative helps schools integrate climate topics into their curriculum.
- **UNDP Youth Projects** and **MyGov campaigns** engage students through challenges, storytelling contests, and training programs.
- **Youth delegates to COP events** represent India on international platforms, bringing home valuable experience and networks.

The Road Ahead: What Can Be Done?

Let's be real. Posters and lectures alone won't fix the climate crisis. But strategic action will. Here's what's needed next:

- **Make climate education exam-relevant**—Include in UPSC, State PSC, and SSC general studies.
- **Invest in teacher training**—especially in Tier 2–3 towns and rural areas.
- **Fund youth-led local campaigns**—through government and CSR microgrants.
- **Create platforms for policy engagement**—like student councils for Environment Ministries.
- **Encourage data-driven awareness**—via citizen science projects and open-access tools.

Final Word: From Protest to Policy

The climate crisis is here, but so is **India's climate courage**. Youth are turning frustration into fuel for reform. Their message is clear: they don't just want a greener planet—they're ready to **build it, speak for it, and stand up for it**.

At **Green Features**, we celebrate these voices because they're not just the future—they're the present. Whether it's a schoolgirl in Uttarakhand holding a handmade placard or a student in Pune cleaning a park every Sunday, these acts are shaping a new climate of awareness in India.

Let's listen, learn, and lead—together.

The Survival of Human Inhabitants Is at Risk: Is This Climate Injustice?

By Anthony Das

Coastal West Bengal is a multi-hazard zone, vulnerable to climate extremes. In 2020, Super Cyclonic Storm Amphan devastated the coastal districts of South and North 24 Parganas. At the heart of this region lies the Sundarbans—an ecological hotspot rich in biodiversity and natural resources, where livelihoods depend heavily on fishing and foraging in mangrove forests.

However, despite its abundance, the Sundarbans is extremely fragile and unsuitable for sustained human habitation. The ecosystem is being pushed to the brink by poverty, overpopulation, and a lack of environmental awareness and sustainable livelihoods. These pressures intensify the effects of climate change and make both the ecosystem and its people increasingly vulnerable.

On May 20, 2020, Cyclone Amphan made landfall in West Bengal around 2:30 PM IST. Though it weakened from a super cyclone to an extremely severe cyclonic storm, it was the fiercest in 100 years. With storm surges up to 5 meters, vast areas were inundated with saline water, cutting off communication lines and damaging infrastructure. The National Disaster Response Force and state agencies evacuated around five lakh people. The storm destroyed homes, crops, electric poles, and transportation networks.

Just as communities began to rebuild, Cyclone Yaas struck in May 2021, undoing much of the recovery efforts. It was a brutal

reminder of how climate injustice manifests—not just in rising temperatures or melting glaciers, but in the repeated destruction of poor, vulnerable lives.

One such story is that of **Chandana Mondal** and her son **Raja**, who try to hold on to what little remains of their home. Their village on Rupamari Island, surrounded by the Goureswar and Dasha rivers, is now frequently overrun by tidal surges. In the face of repeated cyclones, rising sea levels, and land erosion, even newly constructed mud and bamboo embankments have failed to hold back the water.



“The sea often rises above the barriers during high tide and floods our homes,” Chandana says, pointing to where the river used to be before Cyclone Aila in 2007. “After Amphan in 2020, a new embankment was built, but it still can’t stop the water.”

The Sundarbans comprises 102 islands, nearly half of which are inhabited—for now. The constant encroachment of the sea has forced many to live in temporary shelters. Chandana and her family, like many others, live in tarpaulin tents on slightly higher ground, unable to afford land elsewhere.

as the sea advances year after year, the very survival of these communities hangs in the balance.



“We have no money to buy new land. We’re poor people,” she says. “No paddy cultivation for two major seasons. We’re surviving on government rations.”



Even worse than natural disasters, she adds, is the **politicization** of embankment construction. “We thought COVID-19 was bad,” she sighs, “but the corruption around these embankments is worse.”

Chandana’s story echoes those of countless others living on the frontlines of climate change in the Sundarbans. Here, humans and wildlife—particularly the Royal Bengal Tiger—are being squeezed into shrinking spaces, leading to deadly consequences. And

The Evolving Landscape of Global Climate Governance: Outcomes of COP29 and Implications for India

By Singhda Devi

1. Introduction

The annual Conference of the Parties (COP) serves as the paramount forum for international climate negotiations under the UNFCCC, aiming to advance global efforts to combat climate change. COP29, held in Baku, Azerbaijan, from November 11-22, 2024, was particularly anticipated for its focus on climate finance, building upon the outcomes of the first Global Stocktake (GST) at COP28. This article provides a comprehensive overview of the principal outcomes of COP29 and subsequently analyzes their multifaceted implications for India, a nation at the confluence of significant developmental aspirations and profound climate vulnerabilities. The analysis highlights both the opportunities presented by global climate frameworks, such as enhanced financial flows and market mechanisms, and the enduring challenges India faces in balancing its developmental imperatives with ambitious climate action, emphasizing the persistent need for equitable responsibility and enhanced international support.

2. Key Outcomes of COP29 (Baku, November 2024)

COP29 delivered several crucial decisions, though not without contention, reflecting the complex interplay of national interests and global climate imperatives.

2.1. New Collective Quantified Goal (NCQG) on Climate Finance:

A central mandate of COP29 was to establish a new post-2025 climate finance goal, superseding the previous target of \$100 billion per year. After protracted negotiations, parties agreed to a new target for developed countries to lead the mobilization of at least **\$300 billion per year by 2035** for climate action in developing countries. While a significant increase from the previous goal, this figure fell short of the \$1.3 trillion per year by 2035 that many developing nations, including the G77+China group, had advocated for, as indicated in the "Baku-Belém Roadmap to 1.3T" process launched at COP29 (UNFCCC, 2024a; ECCO Climate, 2025). The agreement also emphasized the need for all actors to contribute to scaling up finance from diverse public and private sources.

2.2. Operationalization of Article 6 Carbon Markets:

A notable breakthrough at COP29 was the finalization of the remaining operational elements of Article 6.4 of the Paris Agreement, which pertains to international carbon markets. This agreement provides clearer rules for the accounting and trading of carbon credits, potentially unlocking new avenues for climate finance and cost-effective emissions reductions (Woodwell Climate, 2025). The operationalization of this mechanism, contingent on robust environmental integrity and

transparency, holds the promise of accelerating global decarbonization efforts.

2.3. Global Goal on Adaptation (GGA):

Progress was made on the Global Goal on Adaptation, with parties providing further instructions for technical experts to develop indicators and metrics to measure progress towards global resilience (UNFCCC, 2024a). This builds on the UAE Framework for Global Climate Resilience adopted at COP28 and seeks to strengthen the global effort on adaptation, which remains significantly underfunded compared to mitigation.

2.4. Loss and Damage Fund: Following its establishment at COP28, COP29 confirmed the operationalization of the Loss and Damage Fund, allowing it to begin disbursing funds in 2025 (C2ES, 2025). This marks a critical step in addressing the unavoidable and irreversible impacts of climate change in vulnerable developing countries.

2.5. Other Outcomes: COP29 also saw the extension of the Lima Work Programme on Gender for another ten years, the renewal of the Marrakech Partnership for Global Climate Action until 2030, and further progress on transparency reporting under the Enhanced Transparency Framework (ETF) (UNFCCC, 2024a; Carbon Brief, 2024). However, discussions on strengthening mitigation ambition beyond existing NDCs and concretizing the "transitioning away from fossil fuels" pledge from COP28 saw limited advancement, largely deferred to future COPs.

3. Relevance for India

India, characterized by a rapidly growing economy and a large, climate-vulnerable population, stands at a critical juncture in its

climate action trajectory. The outcomes of COP29, and the broader global climate governance landscape, bear significant implications for the nation.

3.1. Opportunities:

Enhanced Climate Finance Flows: The NCQG, despite falling short of aspirational figures, signals a commitment to increased financial support for developing countries. India requires substantial capital, estimated at approximately USD 2.5 trillion by 2030 to meet its Nationally Determined Contributions (NDCs) and over USD 10 trillion by 2070 for its net-zero target (TERI, 2025; CPI, 2025). The prospect of increased public and private finance, coupled with the operational Loss and Damage Fund, presents a vital opportunity for India to bridge its significant climate finance gap and invest in renewable energy, energy efficiency, and climate-resilient infrastructure. India's draft climate taxonomy, released in May 2025, further aims to channel greater domestic and foreign investment into green technologies and activities (Green Central Banking, 2025).

Carbon Market Participation (Article 6): The finalized rules for Article 6.4 create a clearer framework for India to engage in international carbon markets. This could attract foreign investment, facilitate technology transfer for decarbonization projects, and provide an additional revenue stream to support its climate initiatives, particularly in sectors like renewable energy and sustainable agriculture (Woodwell Climate, 2025; IndiaAI, 2025).

Reinforcement of Renewable Energy Trajectory: India's ambitious renewable energy targets, aiming for 50% of cumulative electric power capacity from non-fossil fuels by 2030

and 500 GW of non-fossil fuel capacity, align strongly with the global emphasis on accelerated energy transition (TERI, 2025). The international climate framework provides a supportive environment for India to continue its rapid expansion of renewable energy, which reached 203.18 GW of installed capacity by October 2024 (TERI, 2025).

Climate Diplomacy and Leadership: India's growing role in global climate diplomacy, highlighted by its proposal to host COP33 in 2028, is strengthened by its active engagement in multilateral processes. The outcomes of COPs provide a platform for India to advocate for its national interests, particularly on equity, climate justice, and finance.

3.2. Challenges:

Mitigation vs. Development Nexus: India consistently champions the principle of Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC), arguing that its per capita emissions remain significantly lower than developed nations. Balancing the escalating global pressure for more ambitious mitigation targets with its imperative for economic growth, poverty alleviation, and energy security remains a fundamental challenge. The lack of stronger global commitments on fossil fuel phase-out at COP29 underscores the ongoing tension between historical responsibility and future development pathways (Carbon Brief, 2024).

Climate Finance Adequacy and Accessibility: Despite the NCQG, the disparity between the agreed financial commitments and India's actual needs remains substantial. India requires not only scale but also predictable, concessional, and grant-based finance to effectively implement its NDCs and adaptation strategies (CPI, 2025).

Navigating complex bureaucratic processes to access international climate funds continues to be a hurdle.

Just Transition for Coal-Dependent Regions:

Coal continues to dominate India's energy mix, accounting for approximately 70% of electricity generation (Eurasia Review, 2025). A rapid transition away from fossil fuels, while necessary for global climate goals, necessitates robust "just transition" plans to support the millions of livelihoods dependent on the coal sector. This requires significant investment in reskilling, economic diversification, and social safety nets, a challenge that requires sustained international cooperation and domestic policy frameworks (Eurasia Review, 2025).

Vulnerability to Climate Impacts: India is disproportionately affected by climate change, facing increasing frequency and intensity of extreme weather events, water scarcity, and threats to agricultural productivity. Over 80% of India's population lives in areas vulnerable to climate-induced disasters (Green Central Banking, 2025). While the GGA aims to strengthen adaptation, the scale of adaptation finance and implementation remains critically insufficient to meet India's escalating needs.

Anticipation for COP30 (Brazil, 2025): The road to COP30 in Belém, Brazil (November 2025), will likely see continued discussions on ramping up mitigation ambition, particularly as countries prepare to submit new or updated NDCs by February 2025. India will need to navigate these discussions, ensuring its climate actions are recognized within a framework of equity and adequate support (UNFCCC, 2025b).

4. Conclusion

COP29 marked an important step in global climate governance, particularly through the establishment of a new climate finance goal and the operationalization of carbon market mechanisms. For India, these outcomes present significant opportunities for accessing much-needed finance and leveraging market-based approaches to accelerate its decarbonization and adaptation efforts. However, the conference also underscored the persistent challenges related to the adequacy of climate finance, the need for a just transition away from fossil fuels, and the enduring tension between historical responsibility and developmental imperatives. As India continues its journey towards a low-carbon and climate-resilient future, the effectiveness of global climate frameworks will heavily depend on their ability to deliver equitable support, foster genuine international cooperation, and respond to the unique circumstances of developing nations like India. The outcomes of COP29 set the stage for crucial discussions at COP30, where the global community must translate commitments into tangible action to secure a sustainable future.

References:

Carbon Brief. (2024, November 24). *COP29: Key outcomes agreed at the UN climate talks in Baku*. Retrieved from <https://www.carbonbrief.org/cop29-key-outcomes-agreed-at-the-un-climate-talks-in-baku/>

C2ES. (2025). *Key Negotiations & Related Outcomes of the UN Climate Change Conference in Baku*. Center for Climate and Energy Solutions. Retrieved from <https://www.c2es.org/document/key-negotiations-related-outcomes-of-the-un-climate-change-conference-in-baku/>

CPI. (2025, March 7). *Transforming India's Climate Finance through Sector-Specific*

Financial Institutions Part 2. Climate Policy Initiative. Retrieved from <https://www.climatepolicyinitiative.org/transforming-indias-climate-finance-through-sector-specific-financial-institutions-2/>

ECCO Climate. (2025, January 10). *What happened at COP29: the results of the Baku Conference of the Parties*. Retrieved from <https://eccoclimate.org/what-happened-at-cop29-the-results-of-the-baku-conference-of-the-parties/>

Eurasia Review. (2025, June 25). *Just Transition, Climate Change, And India: A Mid-2025 Perspective*. Retrieved from <https://www.eurasiareview.com/25062025-just-transition-climate-change-and-india-a-mid-2025-perspective/>

Green Central Banking. (2025, May 16). *India publishes draft climate taxonomy to encourage green investment*. Retrieved from <https://greencentralbanking.com/2025/05/16/india-draft-green-taxonomy-to-encourage-investment/>

IndiaAI. (2025, January 3). *AI and climate action in India: A strategic perspective in 2025*. Retrieved from <https://indiaai.gov.in/article/ai-and-climate-action-in-india-a-strategic-perspective-in-2025/>

TERI. (2025, March 5). *WSDS 2025 Thematic Tracks - Climate Finance: Accelerating India's Decarbonisation Journey*. Retrieved from <https://www.teriin.org/event/wds-2025-thematic-tracks-climate-finance-accelerating-indias-decarbonisation-journey>

UNFCCC. (2024a, November 24). *COP29 UN Climate Conference Agrees to Triple Finance to Developing Countries, Protecting Lives and Livelihoods*. Retrieved from <https://unfccc.int/news/cop29-un-climate-conference-agrees-to-triple-finance-to-developing-countries-protecting-lives-and>

UNFCCC. (2025b). *The road to Belém*. Retrieved from <https://unfccc.int/process-and-meetings/conferences/un-climate-change-conference-belem-november-2025/the-road-to-belem>

Woodwell Climate. (2025, January 9). *Key COP29 outcomes*. Retrieved from <https://www.woodwellclimate.org/key-cop29-outcomes/>

SDGs and Climate Conditions in India: A Call to Action

By- Alphina Chathan Jimmy & John Pallan

India's Climate Crisis: A Threat to Sustainable Development

India, a vast and diverse nation, is particularly vulnerable to the impacts of climate change. Shifting weather patterns have led to hotter summers, erratic monsoons, and unpredictable winters. These changes are disrupting agriculture, water availability, and natural ecosystems. Rising temperatures are upsetting the delicate balance of India's biodiversity and threatening the livelihoods of millions who rely on natural resources.

The consequences are visible across the country. Melting Himalayan glaciers are altering river flows, affecting freshwater supply for millions. Coastal regions face increased flooding and erosion due to rising sea levels, displacing communities and damaging infrastructure. The growing frequency of extreme weather events—such as cyclones, floods, and heatwaves—continues to cause widespread loss of life and property.

The Role of Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs) provide a global framework to tackle pressing challenges and ensure a better future. In the context of climate action, three SDGs are especially critical:

- **SDG 7:** Ensure access to affordable, reliable, sustainable, and modern

energy for all (focus on renewable energy like solar and wind).

- **SDG 13:** Take urgent action to combat climate change and its impacts.
- **SDG 15:** Protect, restore, and promote sustainable use of terrestrial ecosystems, manage forests sustainably, and halt biodiversity loss.

These goals are deeply interconnected. For instance, expanding access to clean energy (SDG 7) reduces emissions that contribute to climate change (SDG 13), while conserving biodiversity (SDG 15) strengthens ecological resilience.

Small Steps, Big Impact

Individuals can contribute meaningfully to climate goals by adopting simple yet powerful practices:

- **Plant trees and conserve water:** Trees absorb carbon dioxide, mitigate heat, and support biodiversity. Water conservation helps secure this vital resource for future generations.
 - **Reduce energy consumption:** Turning off lights and fans when not in use, using energy-efficient appliances, and switching to renewable energy can reduce one's carbon footprint.
 - **Reduce, reuse, and recycle:** These habits reduce landfill waste and
-

conserve resources, contributing to cleaner air, soil, and water.

India's Progress on SDGs

According to the **NITI Aayog SDG Index**, some Indian states have shown promising progress:

- **Kerala:** Tops the index with a score of 79, driven by excellence in healthcare and education.
- **Uttarakhand:** Also scores 79, making strides in renewable energy and sustainable tourism.
- **Tamil Nadu:** With 78 points, it demonstrates strong performance in industrial growth and infrastructure development.

However, several states still lag behind. **Bihar** ranks lowest with 57 points, followed by **Nagaland** and **Jharkhand**, which face challenges in healthcare, education, and basic infrastructure.

Climate Change and the Economy

Climate change poses serious risks to India's economy:

- **Agriculture:** Irregular rainfall and temperature changes disrupt crop cycles, lowering yields and increasing food inflation.
- **Industry:** Rising energy costs, supply chain disruptions, and climate regulations raise operational expenses.
- **Services:** Heatwaves and extreme weather impact tourism, travel, and urban productivity.

Heatwaves and Urban Vulnerability

Heatwaves are becoming more frequent and severe, threatening public health, economic productivity, and urban livability. **Delhi**, India's capital, is particularly vulnerable, with projections indicating a sharp rise in average summer temperatures by 2050. This could reduce labor output, increase health risks, and further strain urban resources.

The Way Forward

While India faces formidable challenges, coordinated efforts by individuals, governments, and civil society can steer the nation toward a sustainable future. Policy reforms, green innovations, and grassroots action must go hand-in-hand.

Recommendations

- **Invest in renewable energy:** Scale up solar, wind, and other clean energy solutions to reduce dependency on fossil fuels.
- **Promote sustainable agriculture:** Encourage climate-resilient farming techniques to safeguard food security and rural livelihoods.
- **Enhance climate resilience:** Invest in adaptive infrastructure, early warning systems, and community-based climate planning.

Conclusion

Climate change is a major hurdle in India's path toward sustainable development. Yet, through collective responsibility, bold policy decisions, and individual lifestyle changes, progress is achievable. The Sustainable Development Goals offer not just a roadmap, but a shared vision for a greener, fairer, and more resilient India.

References

1. *India's Path to Climate Resilience and Sustainability: Challenges, Policies, and Opportunities* – CDPP
2. *NITI Aayog SDG Index* – Government of India
3. *Sustainable Development Goals (SDGs)* – United Nations
4. *India's National Action Plan on Climate Change (NAPCC)*
5. *Climate Change Performance Index 2023*

Environmental Justice

By – Kalpana Sahoo

What Is Environmental Justice?

According to the U.S. Environmental Protection Agency, *environmental justice* means the fair treatment and meaningful involvement of all people—regardless of race, color, national origin, or income—concerning the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental Justice in India

To understand environmental justice in India, we must first acknowledge the country's deep-rooted social disparities and current environmental challenges.

India's rapid industrialization and technological growth have lifted many out of poverty, but they have also led to the unchecked exploitation of natural resources, pollution, and environmental degradation. The focus on economic growth often comes at the cost of ecological balance.

While the concept of environmental justice originated in the U.S. civil rights movement, its core issues have long existed in India. Struggles by tribal and rural communities to protect their land and water have often remained localized due to limited media attention.

Environmental injustices in India manifest in various forms:

- Destruction of natural ecosystems like forests and water bodies

- Harm to the livelihoods of local and indigenous communities
- Public unrest triggered by ecological degradation

According to recent reports, over 85% of environmental legal cases in India fall under high or medium intensity categories—triggering mass mobilization, protests, or legal intervention. These cases largely revolve around:

- Fossil fuels and climate change
- Water management
- Mining and industrial pollution
- Land acquisition and infrastructure development

Fortunately, India's proactive judiciary and institutions like the **National Green Tribunal (NGT)** have played a vital role in ensuring justice in environmental matters. NGT's expertise has helped resolve complex environmental disputes and has empowered grassroots environmental movements.

Climate Change and Marginalized Communities

Climate change does not affect all people equally. Vulnerable and marginalized communities—such as the rural poor, tribal groups, women, and the elderly—bear the brunt of its consequences. These communities often:

- Live in high-risk areas like coastlines, floodplains, or drought-prone regions
-

- Depend on climate-sensitive sectors like agriculture, fisheries, and forestry
- Lack access to basic services, healthcare, or emergency infrastructure

Examples of Inequities:

- In the U.S., low-income and racial minority communities live in areas with higher pollution levels, worsening respiratory and heart health.
- In Australia, Indigenous populations in remote areas suffer more from cyclones and bushfires but have limited emergency support.
- In Bangladesh, flood-prone areas are home to poor communities who repeatedly lose homes and livelihoods to climate disasters.

Climate change also creates **climate refugees**—people forced to migrate due to rising sea levels, droughts, or disasters. Lacking resources, these communities struggle to resettle, deepening cycles of poverty and instability.

In poorer nations:

- Health systems are strained due to heat-related illnesses or disease outbreaks (e.g., malaria, dengue).
- Droughts and erratic rainfall reduce agricultural productivity, leading to hunger and malnutrition.
- Resource scarcity can spark conflict over water, land, and food, especially in fragile economies.

Women, Indigenous people, and other socially marginalized groups are particularly

vulnerable due to systemic inequities and limited political representation.

Climate Inequality: Data & Insights (2022)

The **Climate Inequality Database (2022)** reveals stark disparities in emissions:

- The bottom 50% of Europe emits ~5 tons CO₂/person/year
- In East Asia, it's ~3 tons; in North America, ~10 tons
- The top 10% emits 6–15x more: 29 tons (Europe), 39 (East Asia), 73 (North America)

Surprisingly, the *poorest half* of populations in rich countries are close to achieving 2030 emission targets, while the top half continue to exceed their carbon budget. Current carbon policies, like carbon taxes, often affect lower-income groups more harshly than the wealthy.

Climate Inequality in India (2022)

While India is the third-largest emitter globally (after China and the U.S.), its **per capita emissions remain low** due to its large, low-income population.

Key findings:

- The top 1% in India emit disproportionately more carbon than the bottom 50%.
- Vulnerable regions such as **Odisha, Bihar, and Uttar Pradesh** face extreme climate impacts—floods, droughts, and food insecurity—while contributing the least to emissions.
- Industrialized states like Gujarat and Maharashtra have higher emission footprints.

- Coastal regions like Kerala and West Bengal face rising sea levels and frequent cyclones.
- India's energy transition efforts—solar, wind, green mobility—are progressing but face challenges due to financial and technological constraints.

Global Solutions for Climate Inequality

- 1. Climate Finance & Just Transition**
 - Wealthy countries must deliver grants (not loans) to fund climate adaptation and renewable energy in developing nations.
 - E.g., UN's \$100B/year pledge to the Global South.
- 2. Loss and Damage Fund**
 - Established at COP27 & COP28, this fund compensates poor countries for irreversible climate impacts like rising sea levels.
- 3. Fair Emission Reductions**
 - Rich countries should cut emissions more aggressively, honoring their historical responsibility.
 - Carbon budgets must consider per capita contributions.
- 4. Support for Renewable Energy in Global South**
 - End fossil fuel subsidies and finance clean energy development (e.g., India's **International Solar Alliance**).
- 5. Protection for Indigenous & Vulnerable Communities**
 - Indigenous people protect 80% of global biodiversity.

Climate justice must uphold their rights and knowledge systems.

Addressing Climate Inequality in India

- 1. State-Specific Climate Action Plans**
 - Example: Odisha's climate-resilient agriculture & early flood warning systems
- 2. Targeted Green Investment**
 - Promote solar energy in rural areas
 - Invest in public transport and green jobs for informal workers
- 3. Social Protection & Climate Insurance**
 - Strengthen MGNREGA, expand crop insurance, and provide cash support in climate-affected areas
 - Build insurance mechanisms for small farmers and businesses
- 4. Inclusive Urban Planning**
 - Upgrade slums and provide flood and heatwave-resistant infrastructure to low-income groups
- 5. Empowering Women & Youth**
 - Support women-led green enterprises
 - Promote youth-driven climate movements like **Fridays for Future India**

Key Reports to Know

Source	Key Finding
<i>Oxfam Climate Equality Report (2023)</i>	The richest 1% emit as much carbon as the poorest 66%.
<i>Climate Inequality Report (2023)</i>	Carbon inequality exists even within countries like India.
<i>India's Third Biennial Report to UNFCCC</i>	India's per capita emissions remain among the lowest globally.

Three Big Actions for Climate Justice

Action	Responsibility
Polluters must pay	Wealthy countries & billionaires must cut emissions and finance the Global South

Protect the most vulnerable	Governments must prioritize adaptation and social protection
People-powered solutions	Empower women, youth, and Indigenous communities as climate leaders

Final Thoughts

The climate crisis is inseparable from the crisis of inequality. Environmental justice demands that we confront not just carbon emissions but also the systems of power that determine who benefits from development and who suffers its consequences. As India and the world face a pivotal climate decade, justice must be the foundation of every policy, protest, and plan.

Rural Sustainability and Climate Goals

By Arpita Priyadarshini Mishra

“The future of our rural communities depends on our ability to live in harmony with the land that sustains us.”

Introduction

Rural sustainability and **climate goals** are central to achieving **sustainable development**, particularly in a country like India, where rural communities form the backbone of the economy. As climate change becomes increasingly evident, the need to integrate sustainability into rural development becomes urgent and unavoidable.

Rural Sustainability

Rural sustainability refers to creating thriving, resilient rural communities that are economically productive, socially inclusive, and environmentally sound—today and for future generations.

Rural areas depend heavily on:

- Agriculture
- Natural resources
- Traditional livelihoods

These dependencies make them particularly vulnerable to:

- Resource overuse
- Climate change
- Economic disruptions

Key Elements of Rural Sustainability:

- Eco-friendly farming practices
- Renewable energy solutions

- Waste management systems
- Soil and water conservation
- Improved education, healthcare, and infrastructure
- Community participation and empowerment

The goal is to reduce migration to cities, preserve rural cultures, and promote self-reliant, climate-resilient villages.

Climate Goals

“We are the first generation to feel the effects of climate change, and the last that can do something about it.” – Barack Obama

Climate goals are measurable targets set by governments, regions, or organizations to combat climate change. These goals include:

- Reducing greenhouse gas emissions
- Transitioning to renewable energy
- Adapting to unavoidable climate impacts

For example, the **Paris Agreement** (2015) seeks to:

- Keep global temperature rise well below 2°C above pre-industrial levels
- Pursue efforts to limit the increase to 1.5°C

Many countries now aim for **Net Zero Emissions** by mid-century—balancing

emitted greenhouse gases with those removed from the atmosphere.

Achieving these goals requires:

- International cooperation
- Technological innovation
- Financial investment
- Community and governmental participation

Sustainable Development

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” – Brundtland Commission Report, 1987

Sustainable development integrates:

- **Economic growth**
- **Social inclusion**
- **Environmental protection**

India and 192 UN member states have committed to the **Sustainable Development Goals (SDGs)**—17 global goals including:

- No Poverty
- Clean Water and Sanitation
- Gender Equality
- Affordable and Clean Energy
- Responsible Consumption
- Climate Action

The essence of sustainable development is to uplift all communities while conserving ecosystems and preventing irreversible damage to the Earth.

Climate Change

“Climate change is not waiting for us to act—it’s reminding us every day why we must.”

Climate change refers to long-term shifts in temperature and weather patterns, largely driven by human activities like:

- Burning fossil fuels (coal, oil, gas)
- Deforestation
- Unsustainable land use

These activities increase greenhouse gases (CO₂, methane, nitrous oxide), which trap heat and lead to:

- Melting glaciers
- Rising sea levels
- Frequent floods, droughts, and heatwaves
- Agricultural disruption and biodiversity loss

Solutions involve two key strategies:

1. **Mitigation:** Reducing emissions, increasing carbon sinks
2. **Adaptation:** Adjusting systems to minimize damage

Rural Sustainability and Climate Goals: Pillars of India’s Development

For a country where nearly **65%** of the population resides in rural areas, climate goals and rural sustainability are not optional—they are foundational for India’s **inclusive and resilient growth**.

Why Rural Sustainability Matters

Rural areas:

- Employ over 40% of India's workforce
- Ensure food security
- Protect biodiversity and traditional knowledge

Key Challenges:

1. Soil degradation
2. Groundwater depletion
3. Unsustainable farming
4. Poor waste management
5. Climate-sensitive livelihoods

Without addressing rural vulnerabilities, India's development remains incomplete.

Climate Change: A Clear and Present Danger

Although India is the **third-largest emitter** of greenhouse gases, it is among the most climate-vulnerable countries. Rural India faces:

- Erratic rainfall and extreme weather
- Crop failure and livestock loss
- Resource-driven displacement and migration
- Decline of farming, fishing, and forestry

How Rural Sustainability and Climate Goals Connect

1. **Sustainable Agriculture**
 - Organic farming
 - Crop diversification
 - Agroforestry
 - Soil health restoration
2. **Water Conservation**
 - Rainwater harvesting
 - Watershed management
 - Sustainable irrigation techniques
3. **Clean Energy Access**

- Solar pumps
- Biogas units
- Rural mini-grids and decentralized power

4. **Climate-Resilient Infrastructure**

- All-weather roads
- Flood- and heat-resistant housing
- Cold chains for perishable crops

5. **Community Awareness & Participation**

- Local governance
- Farmer education
- Climate literacy among youth

Key Indian Initiatives

- **National Action Plan on Climate Change (NAPCC)**
 - Focus on missions for solar energy, agriculture, and water conservation
- **PM-KUSUM**
 - Promotes solar-powered irrigation for farmers
- **MGNREGA**
 - Supports climate-adaptive activities like afforestation and watershed projects
- **PMKSY (Pradhan Mantri Krishi Sinchai Yojana)**
 - Enhances irrigation efficiency
- **India's International Pledges**
 - Net Zero Target by 2070 under the Paris Agreement

Roles of Communities & Youth

- **FPOs (Farmer-Producer Organizations):**
Strengthen collective action for sustainable agriculture

- **Self-Help Groups (SHGs):**
Empower rural women with eco-friendly income opportunities
- **Youth Movements:**
Drive awareness, local innovation, and green entrepreneurship

Challenges Ahead

- Low awareness of climate risks
- Inadequate financing for green infrastructure
- Limited access to clean technology
- Conflicts between economic gain and environmental goals

The Way Forward

1. **Mainstream Climate Goals into Rural Policy**
 - Green jobs, sustainable farming, waste-to-energy
2. **Invest in Skills and Capacity Building**
 - Train rural communities in climate-resilient practices
3. **Public-Private Partnerships**
 - Scale renewable energy, smart irrigation, and eco-infrastructure
4. **Community-Led Adaptation**
 - Leverage traditional knowledge and local leadership

Conclusion

“The storms we ignore today will be the floods we cannot escape tomorrow.”

Rural sustainability is not a separate objective—it is the foundation of India’s climate resilience, food security, and social equity. To lead the world in climate action,

India must begin from its villages. The convergence of rural development and climate goals will shape a green, just, and sustainable future for all.

Useful Resources

Source	Purpose
Brundtland Commission Report (1987)	Defines sustainable development and sets the global agenda
NAPCC (India)	India’s national framework on climate action
IPCC Reports	Scientific evidence on climate change impacts and solutions
Ministry of Rural Development (MoRD)	Implements key rural sustainability programs like MGNREGA
NITI Aayog Reports	Tracks India's progress on SDGs and climate indicators

Climate

Creative Corners & Learning Spaces

CSAT English Worksheet

UPSC Prelims 2025 – CSAT Practice

Time Allotted: 20 Minutes (to simulate exam pressure)

Instructions: Read the passages and questions carefully. Choose the best option for each question. Mark your answers on this sheet.

Section A: Reading Comprehension

Passage 1

In recent years, the world has witnessed a growing movement towards sustainable living, driven by increasing awareness of climate change and environmental degradation. A key component of this shift is the concept of a circular economy, which stands in stark contrast to the traditional linear "take-make-dispose" model. The linear model, which has dominated industrial production for centuries, is inherently wasteful and places immense pressure on finite natural resources. A circular economy, by contrast, aims to keep resources in use for as long as possible, extracting the maximum value from them while in use, and then recovering and regenerating products and materials at the end of each service life.

This model is not merely about recycling. While recycling is a part of the circular economy, the philosophy extends much further to include design for longevity, repairability, and reusability. For instance, a company designing a smartphone with easily replaceable parts, or a clothing brand offering repair services, is embracing the circular model. The economic and environmental benefits are manifold. It can reduce waste, lower carbon emissions, and create new job opportunities in sectors like repair and remanufacturing. However, the transition is not without its challenges, including the need for new infrastructure, changes in consumer behavior, and initial investment costs.

Questions based on Passage 1:

1. **What is the primary difference between a linear and a circular economy, according to the passage?**
 - a. A linear economy is more efficient in manufacturing, while a circular economy is better for recycling.
 - b. A linear economy is based on a "take-make-dispose" model, while a circular economy focuses on keeping resources in use.
 - c. A linear economy uses fewer resources, while a circular economy is a more expensive model.
 - d. A linear economy is an older concept, whereas a circular economy is a recent invention.
 2. **The author's tone in the passage can be best described as:**
 - a. Critical
-

- b. Optimistic
 - c. Analytical
 - d. Sarcastic
3. **According to the passage, which of the following is NOT a core principle of a circular economy?**
- a. Designing products for longevity
 - b. Recycling waste materials
 - c. Maximizing the initial profit from raw materials
 - d. Creating job opportunities in new sectors
4. **The phrase "manifold benefits" most likely means:**
- a. Limited benefits
 - b. Many and various benefits
 - c. Benefits that are hard to achieve
 - d. Benefits related to manufacturing
5. **What can be inferred about the transition to a circular economy from the passage?**
- a. It is a simple and quick process.
 - b. It is a change that will happen naturally without intervention.
 - c. It requires significant changes in infrastructure and consumer habits.
 - d. It is a theoretical concept with no practical application.

Section B: Critical Reasoning

1. **Statement:** A recent study found that employees who take regular short breaks throughout the day report higher job satisfaction and productivity.
Conclusion: Therefore, all companies should mandate regular short breaks for their employees to improve overall performance.
Assumption: Which of the following is an underlying assumption of the conclusion?
- a. High job satisfaction is directly proportional to high company profits.
 - b. The study's findings are applicable to all types of workplaces and job roles.
 - c. Employees would not take breaks on their own without a company mandate.
 - d. The study was conducted on a large and diverse group of employees.

Section C: Sentence Completion/Vocabulary

Choose the most appropriate word to complete the sentence.

1. **The committee's decision was met with widespread _____ from the public, who felt their concerns had been ignored.**
- a. approbation
 - b. acquiescence
 - c. consternation
 - d. tranquility
2. **Despite the overwhelming evidence, the politician continued to _____ the allegations against him.**
- a. corroborate
 - b. substantiate
-

- c. reiterate
- d. repudiate

Section D: Reading Comprehension (Part 2)

Passage 2

The advent of Artificial Intelligence (AI) and its rapid integration into daily life has sparked a vigorous debate about its long-term societal impact. While proponents highlight the potential for AI to revolutionize healthcare, education, and scientific research, others caution against its unchecked proliferation. A primary concern is the potential for job displacement, as AI-powered automation becomes capable of performing tasks traditionally handled by humans. However, this perspective may be too simplistic. History shows that technological revolutions, while disrupting existing job markets, often create new ones. The rise of the internet, for example, rendered many traditional roles obsolete but simultaneously spawned an entire industry of web developers, data analysts, and digital marketers.

Another critical area of concern is ethical. The use of AI in decision-making, particularly in fields like criminal justice and finance, raises serious questions about bias. If the algorithms are trained on data that reflects historical biases, they are likely to perpetuate and even amplify those biases. Thus, the development of robust ethical frameworks and regulatory oversight is seen as crucial to harnessing AI's benefits while mitigating its risks.

Questions based on Passage 2:

1. **What is the main argument presented by the author regarding job displacement due to AI?**
 - a. AI will lead to massive unemployment with no new jobs created.
 - b. The fear of job displacement is unfounded and should be ignored.
 - c. Historical precedent suggests that new technologies often create new jobs to replace old ones.
 - d. The government should ban AI to protect existing jobs.
2. **The word "proliferation" in the first paragraph most nearly means:**
 - a. The slow development of something
 - b. The sudden decline of something
 - c. The rapid increase in the number or amount of something
 - d. The ethical control of something
3. **The passage suggests that a key ethical challenge of AI is:**
 - a. Its inability to perform complex tasks.
 - b. Its potential to perpetuate and amplify existing societal biases.
 - c. Its high cost of development.
 - 4d. The lack of public interest in its applications.

Section E: Passage-Based Question (Decision Making)

Passage 3

A local municipality is considering two proposals to manage its waste.

Proposal A suggests investing heavily in a state-of-the-art incinerator that can process all non-recyclable waste, generating electricity in the process. This would significantly reduce the volume of waste sent to landfills and provide a new revenue stream. However, there are concerns about the potential for air pollution and the high initial cost.

Proposal B advocates for a community-wide composting program for organic waste and a single-stream recycling facility for all other recyclables. This is a much cheaper option initially and promotes community engagement, but it will not reduce the volume of non-recyclable waste going to the landfill.

Question: If you were a member of the municipal council and your primary goal was to drastically reduce the amount of waste going to landfills as quickly as possible, which proposal would you most likely support, based on the information provided?

- a. Proposal A, because it directly addresses non-recyclable waste and landfill volume.
- b. Proposal B, because it is cheaper and encourages community participation.
- c. Neither, because both have significant drawbacks.
- d. Both, as they can be implemented together for the best results.

Answer Key and Detailed Explanations

Section A: Reading Comprehension

1. **Correct Answer: b.** The passage explicitly defines the linear model as "take-make-dispose" and the circular model as keeping "resources in use for as long as possible." Options a, c, and d contain information not supported by the passage as the primary difference.
2. **Correct Answer: c.** The author presents the concept of a circular economy, its benefits, and its challenges in a balanced, factual, and objective manner. The tone is neither overly positive (optimistic) nor negative (critical), and there's no hint of mockery (sarcastic).
3. **Correct Answer: c.** The passage mentions reducing waste, recycling, designing for longevity, and creating new jobs as principles or outcomes of a circular economy. Maximizing initial profit is part of the linear model, where the focus is on a quick transaction of goods.
4. **Correct Answer: b.** The prefix "mani-" comes from the Latin for "many." "Manifold" means many and of various kinds. The context also suggests this, as the author lists several different types of benefits (economic, environmental, job creation).
5. **Correct Answer: c.** The final sentence of the first paragraph states, "the transition is not without its challenges, including the need for new infrastructure, changes in consumer behavior, and initial investment costs." This directly supports option c.

Section B: Critical Reasoning

1. **Correct Answer: b.** The conclusion extrapolates the findings of a "recent study" to "all companies." This is only logically sound if we assume the study's findings are universally applicable, which is the underlying assumption.

Section C: Sentence Completion/Vocabulary

1. **Correct Answer: c.** "Consternation" means a feeling of anxiety or dismay, typically at something unexpected. The public's feeling that their concerns were ignored would lead to this feeling. *Approbation* is approval, *acquiescence* is passive agreement, and *tranquility* is calmness, all of which are opposite to the context.
2. **Correct Answer: d.** "Repudiate" means to refuse to accept or be associated with something; to deny the truth or validity of. This fits the context of a politician denying allegations. *Corroborate* and *substantiate* mean to confirm, and *reiterate* means to repeat, none of which fit the context of denial.

Section D: Reading Comprehension (Part 2)

1. **Correct Answer: c.** The author presents the job displacement concern and then immediately counters it by citing "History shows that technological revolutions... often create new ones." This is the main point the author makes.
2. **Correct Answer: c.** The passage talks about the "rapid integration" and "vigorous debate" about AI, suggesting its growth is widespread and fast. "Proliferation" means rapid increase, which fits this context.
3. **Correct Answer: b.** The passage states that if AI algorithms are trained on biased data, they are likely to "perpetuate and even amplify those biases." This is the core ethical concern raised in the second paragraph.

Section E: Passage-Based Question (Decision Making)

1. **Correct Answer: a.** The question asks for the best choice to "drastically reduce the amount of waste going to landfills as quickly as possible." Proposal A, by incinerating all non-recyclable waste, directly and immediately addresses this goal. Proposal B's approach is piecemeal and does not deal with the bulk of non-recyclable waste.
-

Mathematical Reasoning

UPSC Prelims 2025 – CSAT Practice

1. P and Q walk along a circular track. They start at 5:00 a.m. from the same point in opposite directions. P walks at an average speed of 5 rounds per hour, and Q walks at an average speed of 3 rounds per hour. How many times will they cross each other between 5:20 a.m. and 7:00 a.m.?

UPSC Prelims 2025 CSAT

- (a) 12
- (b) 13
- (c) 14
- (d) 15

Solution: 1. Let t be the time in hours after 5:00 a.m.

2. Since P and Q walk in opposite directions, their relative speed (in rounds per hour) is

$$5 + 3 = 8 \text{ rounds/hour.}$$

3. They meet each time their combined distance equals an integer number of laps:

$$8 \cdot t = k, \text{ where } k = 1, 2, 3, \dots$$

so the k -th meeting happens at

$$t = k/8 \text{ hours after 5:00.}$$

4. We want all meetings between 5:20 a.m. and 7:00 a.m.

- 5:20 a.m. corresponds to $t = 20/60 = 1/3 \approx 0.3333$ hours.
- 7:00 a.m. corresponds to $t = 2$ hours.

So we need

$$1/3 \leq k/8 \leq 2$$

Multiply through by 8:

$$8/3 \leq k \leq 16$$

• $8/3 \approx 2.667 \Rightarrow$ the smallest integer k is 3.

• The largest k is 16.

5. Thus $k = 3, 4, 5, \dots, 16$. How many integers is that?

From 3 up to 16 inclusive there are $16 - 3 + 1 = 14$ meetings.

Therefore, they cross each other 14 times between 5:20 and 7:00.

Correct Answer : (c) 14

2. P is the brother of Q and R. S is R's mother. T is P's father. How many of the following statements are definitely true?

UPSC Prelims 2025 CSAT

I. S and T are a couple.

II. Q is T's son.

III. T is Q's father.

IV. S is P's mother.

V. R is T's daughter.

VI. P is S's son.

Select the correct answer using the code given below:

(a) Only two

(b) Only three

(c) Only four

(d) Only five

Solution: Let's first restate the given facts in "family-tree" form:

1. P is the brother of Q and of R.

$\Rightarrow$ P is male, and (in a standard puzzle) P, Q and R share the same two parents.

2. S is R's mother.

$\Rightarrow$ S is the mother of R (and hence, of P and Q).

3. T is P's father.

$\Rightarrow$ T is the father of P (and hence, of Q and R).

So the (full) parents of P, Q, R are S (mother) and T (father). Now check each statement:

I. S and T are a couple.

– True (they are mother and father of the same children).

II. Q is T's son.

– Not necessarily: we know Q is T's child, but Q's gender wasn't given.

III. T is Q's father.

– True (T is father of P, Q and R).

IV. S is P's mother.

– True (S is the mother of R, and P is R's full brother $\Rightarrow$ same mother).

V. R is T's daughter.

– Not necessarily: R is T's child, but R's gender wasn't given.

VI. P is S's son.

– True (P is male and S is the mother of P, Q, R).

Counting the definitely true ones: I, III, IV and VI $\Rightarrow$ 4 statements.

Answer: (c) Only four

3. If NO is coded as 210, NOT is coded as 4200, and NOTE is coded as 21000, then how is NOTES coded?

UPSC Prelims 2025 CSAT

(a) 399000

(b) 420000

(c) 440000

(d) 630000

Solution: We notice that each code is the product of the letters' positions in the alphabet:

• $N = 14$

• $O = 15$

• $T = 20$

• $E = 5$

• $S = 19$

Check the given examples:

1. $NO \rightarrow 14 \times 15 = 210$

2. $NOT \rightarrow 14 \times 15 \times 20 = 210 \times 20 = 4200$

3. $NOTE \rightarrow 14 \times 15 \times 20 \times 5 = 4200 \times 5 = 21000$

Therefore, for NOTES:

$NOTES \rightarrow 14 \times 15 \times 20 \times 5 \times 19$

$= (14 \times 15 \times 20 \times 5) \times 19$

$= 21000 \times 19$

$= 399000$

Answer: (a) 399000

4. If FRANCE is coded as 654321 and GERMANY is coded as 9158437, then how is YEMEN coded?

UPSC Prelims 2025 CSAT

(a) 54321

(b) 81913

(c) 71913

(d) 71813

Solution: 1. From “FRANCE $\rightarrow$ 654321” we get a letter $\rightarrow$ digit mapping:

$F \rightarrow 6, R \rightarrow 5, A \rightarrow 4, N \rightarrow 3, C \rightarrow 2, E \rightarrow 1$

2. From “GERMANY $\rightarrow$ 9158437” the same mapping must hold for letters already seen, and it tells us the new letters’ codes:

$G \rightarrow 9, E \rightarrow 1$ (matches), $R \rightarrow 5, M \rightarrow 8, A \rightarrow 4, N \rightarrow 3, Y \rightarrow 7$

3. Now code “YEMEN” by replacing each letter with its digit:

$Y \rightarrow 7$

$E \rightarrow 1$

$M \rightarrow 8$

$E \rightarrow 1$

$N \rightarrow 3$

So YEMEN $\rightarrow$ 71813

Answer:(D) 71813

5. In a certain code, if 64 is written as 343 and 216 is written as 729, then how is 512 written in that code?

UPSC Prelims 2025 CSAT

(a) 1000

(b) 1331

(c) 1728

(d) 2197

Solution:

1. Observe that

$64 = 4^3$ and its code $343 = 7^3$

$216 = 6^3$ and its code $729 = 9^3$

2. In each case, the cube root is increased by 3:

$4 \rightarrow 7$ ($4 + 3 = 7$)

$$6 \rightarrow 9 (6 + 3 = 9)$$

3. Apply the same rule to 512:

$$512 = 8^3$$

Increase 8 by 3 $\rightarrow$ 11

$$\text{Cube it} \rightarrow 11^3 = 1331$$

Hence, 512 is written as 1331

Answer:(b) 1331

6. What is the remainder when 4964^{96} is divided by 6?

Solution:

Step 1: Basic idea of Modular Arithmetic

We want to find what remainder is obtained when $4n4^n$ (no matter how large nn is) is divided by 6.

To figure this out, we try smaller powers first.

Step 2: Check small powers of 4 divided by 6

Power	Value	mod 6 Result
414^1	4	$4 \bmod 6 = 4$
424^2	16	$16 \bmod 6 = 4$
434^3	64	$64 \bmod 6 = 4$
444^4	256	$256 \bmod 6 = 4$

In every case, the remainder is 4.

Step 3: Understanding the Pattern

For all nn , $4n \bmod 6 = 4$.

Therefore:

$$496 \bmod 6 = 44^{96} \bmod 6 = 4$$

Answer:

Remainder = 4

7. The angle of elevation of a cloud from a point 200 m above a lake is 30° , and the angle of depression of its reflection in the lake is 60° . The height of the cloud is.

Given Data

- A point on the shore of a lake observes a cloud.
- The angle of elevation to the cloud = 30°
- The angle of depression to the cloud's reflection in the lake = 60°
- The horizontal distance from the observer to the point directly below the cloud (on the lake) = 200 meters

Find

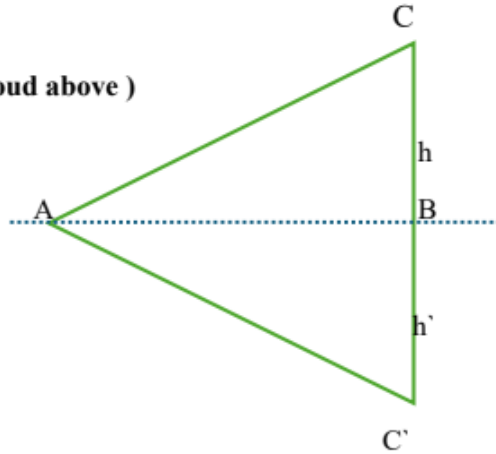
- The height of the cloud above the lake.

Let:

- Point A be the observer's position on the lake shore.
- Point B be the point on the lake directly below the cloud.
- Point C be the cloud.
- Point C' be the reflection of the cloud in the lake.
- Distance AB = 200 m
- Height of cloud = h
- Depth of reflection = h'

Step 1: Use trigonometry

In triangle ACB (for the cloud above)



$$\tan(30) = \frac{h}{200}$$

$$h = 200 * \tan(30)$$

$$h = 200 * \frac{1}{\sqrt{3}}$$

$$h = 115.47 \text{ m}$$

In triangle AC'B (for the reflection below):

$$\tan(60) = \frac{h'}{200}$$

$$h' = 200 * \tan(60)$$

$$h' = 200 * \sqrt{3}$$

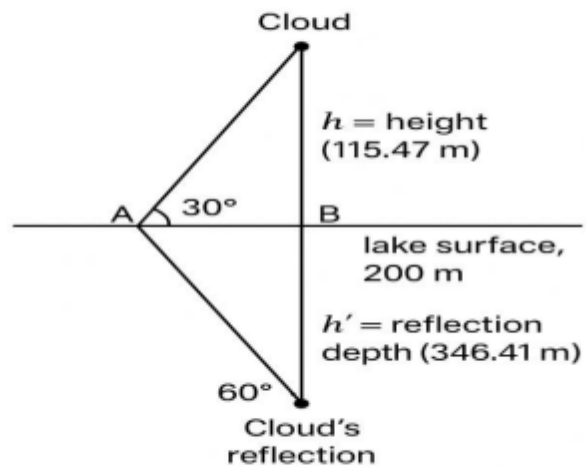
$$h' = 346.41 \text{ m}$$

○ Step 2: Total height of the cloud

$$\text{Total height} = h + h'$$

$$= 115.47 + 346.41$$

$$= 461.88 \text{ meters}$$



Answer: The height of the cloud is approximately 462 meters.

8. What is the last digit of 17^{256} ?

Solution:

Step 1: Find $17^{256} \bmod 10$

To find the last digit of any number, we take it mod 10.

When a number is divided by 10, the remainder is its last digit.

So, we need:

$$17^{256} \bmod 10$$

Step 2: Observe the pattern of powers of 17

Let's look at the last digit of the first few powers of 17:

- $17^1 = 17 \rightarrow$ last digit 7
- $17^2 = 289 \rightarrow$ last digit 9
- $17^3 = 4913 \rightarrow$ last digit 3
- $17^4 = 83521 \rightarrow$ last digit 1

After this, the pattern repeats:

$$7 \rightarrow 9 \rightarrow 3 \rightarrow 1 \rightarrow 7 \rightarrow 9 \rightarrow 3 \rightarrow 1 \dots$$

Cycle length = 4

Step 3: Determine the position in the cycle

Since the cycle length is 4, we divide the exponent by 4:

$$256 \div 4 = 64 \text{ remainder } 0$$

A remainder of 0 means 17^{256} is at the 4th position in the cycle.

Step 4: Identify the last digit

From the cycle:

1st $\rightarrow$ 7

2nd $\rightarrow$ 9

3rd $\rightarrow$ 3

4th $\rightarrow$ 1

So the last digit is 1.

Answer:

The last digit of 17^{256} is 1.

Puzzles & Riddles

Climate & Indian History

A. Riddles (Climate)

1. I travel the world without feet, I'm measured in parts per million, and trap heat in the sky. What am I?
2. I'm a fossil, but not a bone; burn me for light and I warm your home—yet I warm the planet too. Who am I?
3. With blades I dance and never tire; you catch my spin and turn it to wire. What am I?
4. I fall from the sky, sometimes late, sometimes none at all; farmers wait for me, and I decide their fate. Who am I?
5. I am the invisible blanket around Earth; the thicker I get, the hotter you feel. What am I called?

B. Riddles (Indian History)

1. I carried salt on my back and truth in my step, from Sabarmati to the sea. What am I?
2. Born in 1630, I forged a swaraj on the Sahyadris and wore a crown at Raigad. Who am I?
3. Printed in 1909, I drew a map of a land not yet free; in 1947, the border found me. What am I?
4. I am the iron pillar that never rusts, standing centuries in a Delhi court. What am I?
5. I am the university older than many kings, reborn in Bihar's fields of memory. What am I?

C. Match the Pair: Match climate actions (Left) with their best impact (Right).

- | | |
|-----------------------------|--|
| A. Rooftop solar at schools | 1. Less methane from landfills |
| B. Planting native trees | 2. Lower electricity bills & cleaner power |
| C. Rainwater harvesting | 3. Restores biodiversity & local shade |
| D. Public transport day | 4. Cuts traffic emissions |
| E. Composting food waste | 5. Recharges groundwater. |

Answers A) Climate Riddles: 1. Carbon dioxide (CO₂) 2. Coal 3. Wind turbine 4. Monsoon 5. Greenhouse effect
B) History Riddles: 1. Dandi March 2. Chhatrapati Shivaji Maharaj 3. Radcliffe Line 4. Mehrauli Iron Pillar 5. Nalanda
C) Match: A-2, B-3, C-5, D-4, E-1

India, Tomorrow in Our Hands

India is a garden, wide and bright,
With rivers that sparkle in morning light.
Mountains stand tall, the seas softly sing,
A land of colors, of hope, of spring.

But smoke fills skies, and trees grow thin,
We must protect the world we're in.
If water dries and soil turns bare,
What kind of future will we share?

Young hearts rise with dreams so true,
Building tomorrow with all they do.
Plant a tree, and watch it grow,
Save each drop, let rivers flow.

Ride a cycle, walk a mile,
Let the Earth breathe and smile.
Together we stand, strong and free,
India's youth, the hope we'll be.

For tomorrow's sun will shine so bright,
If we choose today to do what's right.
With caring hands and voices clear,
We build a future, green and near.

~ By Nazmin Saikia

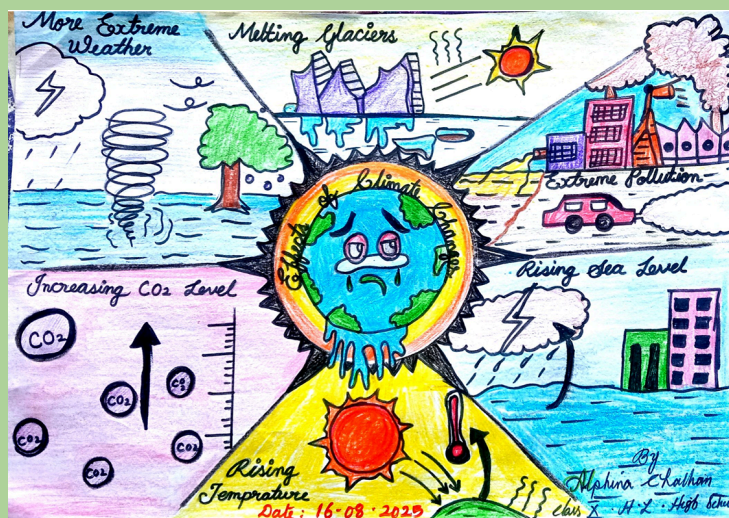




Artwork Contributions



Alexander Chathan is a student of Dr. S N Subbarao International Residential school, Jafrabad, MP.



Alphina Chathan is a student of School H L High School, Jaura, MP.



Angelina Chathan is a student of Dr. S N Subbarao International Residential school, Jafrabad, MP.



Charu Shrivastava is a student of Ultraneous School of Studies, MP.



Gunjan Batham is a student of St Mary's School, MP.



Arun Rajak is a student of TR Gandhi Public School, MP.



Activites

“Cleanliness, Water Conservation and Plantation by Youth Network”





Green Features



Tel: +91 9999062208



saded.greenfeatures@gmail.com



<https://greenfeatures.blogspot.com/>



<https://innovedica.com/>



[instagram.com/mahaul_innovedica](https://www.instagram.com/mahaul_innovedica)



x.com/InnoVedica_2024