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July-December, 2025



Editor
R.K. Verma

Special Issue on
UNSDGs and Public Administration

Indian Institute of Public Administration
Bihar Regional Branch, Patna

Indian Institute of Public Administration Bihar Regional Branch, Patna

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Special Supplement on

UNSDGs and Public Administration

INDIAN INSTITUTE OF PUBLIC ADMINISTRATION

Bihar Regional Branch

Vermas, Shiva Path, New Purendrapur, Patna 800 001

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From the Desk of the Chief Editor

I have immense pleasure to disclose that Bihar Journal of Public Administration, being in UGC-CARE list since June 2019, is indexed by some agencies like Cosmos and has earned Impact Factor 6.129. As the Chief Editor, I have the pleasure to present this special issue of the Bihar Journal of Public Administration on the theme “UNSDGs and Public Administration’ which is the result of the offer given to us by the Department of Public Administration, MANUU, Hyderabad to publish selected papers presented in International Conference organised by the Department in January, 2025. It will not be out of place to mention that we intend to accommodate the new ideas and issues of our focus area of research. We also encourage those young researchers whose papers contain assessment of recent trends of research in Public Administration and allied disciplines, especially covering the ground reality.

No doubt we feel over stressed due to resource crunch, large numbers of paper submissions since its inclusion in UGC-CARE List and strains of management, however, we have been able to manage to publish it regularly. I, in personal capacity as Vice Chancellor of Magadh University, Bodh-Gaya, commit myself to facilitate the regular publication of the Journal by involving institutions of higher education, falling in this part of the state. I express my thanks to the learned contributors, the entire Editorial team and the anonymous referees for carrying the venture of publication of BJPA and that too by maintaining quality.

Prof. S.P. Shahi

Vice Chancellor, Magadh University, Bodh Gaya

Chief Editor

Editorial

Achievement of any development goals depends on how policies are made and implemented. This involves performance of administrative machinery in utilisation of available resources and meeting the socio-economic challenges. In the light of this concern, the offer of the Department of Public Administration, Maulana Azad National Urdu University (MANUU), Hyderabad to bring out a thematic issue of BJPA on the 'UNSDGs and Public Administration' for publishing the selected papers presented in the International Conference on the topic "SDGs for a Better World: Role of Public Administration" organised by the Department held during 21-22 January, 2025 was accepted by us. The theme is not only relevant at this point of time when the target year 2030 is approaching closer, but also for rendering suggestions for appropriate reforms in public administration in India for achieving the goals. As such, we are happy to present this thematic supplement of BJPA before the academics, administrators, policy makers and readers. We shall be contented, if the Issue is proved even partially useful for the policy makers.

The present Special Issue of BJPA covers a wide range of subjects related to achieving the UN sustainable development goals vis-à-vis Indian public administration, such as, need of strengthening institutions and capacity building, strengthening role of artificial intelligence (AI), technology integration and Big data, local self-governments like panchayati raj institutions (PRIs) and urban local bodies (ULBs) and international organisations as well. The issues of community culture, cultural capital, education and health services, transformation of urban slums, waste to resource (W2R) approach to solid waste management, inequality, gender based discrimination and crimes, dignity to labour and environmental issues for achieving the SDGs have been covered in the present special number of BJPA.

The IIPA Bihar Regional Branch and the Editorial team express thankfulness to external support from expert reviewers and the contributors. At last, though utmost care has been taken to maintain the quality, yet we shall feel obliged to have suggestions from readership for improvements in the Journal.

– Editor

Note of the Guest Editor

It fortunate on my part that the Editorial Team of Bihar Journal of Public Administration entrusted me to edit the present special issue of the Journal as the Guest Editor. The present issue is an outcome of the International Conference organized by the Department of Public Administration, Maulana Azad National Urdu University (MANUU), Hyderabad, India held on 21–22 January 2025. The conference brought together eminent scholars, practitioners, and policymakers from India and abroad to deliberate on the crucial role of public administration in realizing the Sustainable Development Goals (SDGs)—a universal agenda aimed at achieving inclusive growth, environmental sustainability, and social justice by 2030. I was part of the organising team of the Conference.

The discussions at the conference underscored that public administration stands at the heart of the SDG implementation process. Effective governance, sound policy frameworks, institutional capacity, and citizen engagement are indispensable for translating global aspirations into local realities. From ensuring clean water and sanitation to promoting quality education, gender equality, and climate resilience, administrative systems act as the backbone for coordination, policy execution, and accountability. The SDGs, therefore, not only demand technical and financial resources but also a renewed commitment to ethical, transparent, and participatory governance. The Bihar Journal of Public Administration has been liberal enough to provide a platform for these scholarly engagements that link theory with practice.

This special issue seeks to extend these vital conversations. It features research papers, policy analyses, and case studies that explore how administrative reforms, decentralization, digital governance, and public sector innovation can accelerate SDG progress. The contributions collectively highlight the need for collaborative governance, where government institutions work hand-in-hand with academia, civil society, and the private sector. Moreover, they emphasize the importance of capacity building among public servants to deal with complex, cross-cutting challenges such as climate change, urbanization, and poverty reduction. As we approach the midpoint of the 2030 Agenda, this special issue invites readers to rethink administrative systems as dynamic instruments of change, capable of shaping a more equitable and sustainable world.

I express my gratitude to the Editor (BJPA), contributors, reviewers, and the organizing committee of MANUU's International Conference for their valuable insights and academic rigour. It is our hope that this special issue will inspire further research and policy dialogue on strengthening public administration as a key driver of sustainable development in India and beyond.

–Reyaz Ahmed,
Guest Editor

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UNSDGS: NEED OF INSTITUTIONAL STRENGTHENING AND CAPACITY BUILDING OF INDIAN PUBLIC ADMINISTRATION

Md. Reyaz Ahmad*

Abstract

The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, represent a comprehensive and universal agenda aimed at eradicating poverty, protecting the environment, and ensuring prosperity for all by 2030. Comprising 17 goals and 169 targets, the SDGs necessitate systemic and inclusive development strategies tailored to each nation's specific context. As a signatory, India has aligned its development priorities with the SDG framework, with institutions like NITI Aayog playing a central role in monitoring and policy coordination. The effective realization of the SDGs in India depends heavily on the administrative capacity of state and local governments, inter-agency coordination, policy coherence, and stakeholder participation.

As such the present article critically examines India's public administration's preparedness in delivering on its SDG commitments. It highlights the pressing need for capacity building across all levels of governance and proposes institutional reforms to enhance administrative efficiency, accountability, and inclusiveness.

Keywords: SDG, United Nations, NITI Aayog, Policy, Administrative System, Governance, Capacity Building, Reforms.

INTRODUCTION

The Sustainable Development Goals (SDGs), adopted by the United Nations General Assembly in September 2015 as part of the 2030 Agenda for Sustainable Development, constitute an ambitious global blueprint aimed at achieving a more equitable, inclusive, and sustainable future. Comprising 17 interlinked goals and 169 targets, the SDGs cover a broad range of social, economic, and environmental

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dimensions, ranging from eradicating poverty and hunger to promoting gender equality, sustainable industrialisation, climate action, and strong institutions (United Nations, 2015).

India, as one of the world's most populous and diverse countries, plays a critical role in the global pursuit of these goals. With approximately 17% of the world's population, India's progress in achieving the SDGs is essential not only for national development but also for the success of the global agenda (UNDP India, 2022). Recognising this responsibility, the Government of India has made considerable efforts to align national development priorities with the SDGs. Institutions like **NITI Aayog**, the central policy think tank, have been pivotal in mapping the goals to existing government schemes, developing indicators, and facilitating state-level localisation (NITI Aayog, 2021).

However, the mere integration of the SDGs into national and sub-national plans is insufficient. The real challenge lies in the effective implementation and localisation of the goals, especially in a country characterized by federalism, vast inter-regional disparities, and a complex administrative structure (Bhan, et. al, 2020). Localisation demands context-specific strategies, robust institutions, efficient public service delivery, and active participation from all stakeholders, including civil society, the private sector, and marginalized communities.

In this context, public administration emerges as a cornerstone for realizing the SDGs. It is the engine that translates policy into action, allocates resources, enforces regulations, and delivers services (Peters, 2017). Yet, India's public administration system faces persistent issues such as bureaucratic inefficiency, lack of inter-departmental coordination, inadequate capacity at the local levels, outdated institutional frameworks, and a weak culture of accountability and innovation (World Bank, 2020).

These challenges necessitate a dual focus: first, on capacity building, which involves enhancing the knowledge, skills, and competencies of public officials to plan, implement, and monitor SDG-related interventions effectively; and second, on **institutional reforms**, aimed at improving the structural, procedural, and cultural dimensions of governance to make them more responsive, transparent, and adaptive (UN DESA, 2019).

CONCEPTUAL FRAMEWORK: PUBLIC ADMINISTRATION AND SDGS

Public administration plays a central and indispensable role in the achievement of the Sustainable Development Goals (SDGs) and broader development objectives. As the operational arm of the government, public administration translates policies into action, ensures service delivery, maintains regulatory frameworks, and upholds democratic governance (UN DESA, 2018). In the context of the SDGs –

an ambitious and comprehensive global agenda adopted by the United Nations in 2015 – public administration emerges as both a driver and enabler of sustainable development (UN DESA, 2018).

The SDGs encompass a wide range of targets, from eradicating poverty and hunger to promoting education, gender equality, climate action, and institutional integrity. Meeting these goals requires not only sound policy formulation but also effective execution, coordination, and monitoring – all of which fall within the purview of public administration (United Nations, 2015). It ensures that developmental strategies are localised, context-sensitive, and implemented with accountability and transparency. In a country as vast and diverse as India, for instance, the decentralisation of governance and the strengthening of local administrative bodies are essential to tailoring SDG-related interventions to regional needs and socio-economic realities (Peters, 2017).

Public administration contributes significantly to capacity building, institutional strengthening, and resource mobilization – key elements in sustainable development (Jha, 2021). Effective institutions foster trust in government, facilitate citizen participation, and create an environment conducive to long-term growth and inclusivity. Furthermore, the administrative machinery plays a critical role in collecting and managing data, which is vital for evidence-based policymaking and tracking SDG progress (OECD, 2019).

In development contexts, especially in the Global South, public administration is not only about governance efficiency but also about developmental equity (UNDP, 2022). It ensures that marginalised and vulnerable populations have access to essential services and are included in decision-making processes. For example, welfare schemes targeting poverty alleviation, health, and education are implemented through bureaucratic channels. Their success often depends on the integrity, competence, and responsiveness of public servants (Grindle, 1997).

Moreover, the significance of public administration lies in its adaptive capacity to manage complex challenges like climate change, urbanisation, disaster risk, and digital transformation (World Bank, 2004). It must embrace innovation, intersectoral collaboration, and participatory governance to remain effective in the face of dynamic global trends. Institutions must also adopt ethical frameworks and accountability mechanisms to ensure that development does not come at the cost of human rights or environmental sustainability (UN, 2020).

In essence, public administration acts as the backbone of sustainable development. It is through its systems, institutions, and personnel that global aspirations such as the SDGs are realised at the national and local levels. The strength, inclusivity, and efficiency of public administration directly influence a

nation's developmental trajectory, making it not just a facilitator but a cornerstone of sustainable progress.

GLOBAL PERSPECTIVES ON SDG IMPLEMENTATION

The implementation of the Sustainable Development Goals (SDGs) presents a complex and varied picture across the globe, shaped by differences in political systems, institutional capacities, economic resources, cultural contexts, and regional challenges. Since their adoption in 2015, countries have made varying degrees of progress. Some have integrated the SDGs into national development plans, while others struggle with systemic barriers, resource limitations, or conflicting priorities (Fukuyama, 2013).

At the global level, there has been a concerted push for aligning national policies with the 2030 Agenda. Several countries, particularly in Europe and parts of Asia, have established dedicated SDG coordination mechanisms to ensure policy coherence. Scandinavian nations such as Sweden, Denmark, and Finland have demonstrated leadership by adopting transparent governance models and prioritising equity, environmental sustainability, and social welfare – key principles of the SDGs (UN, 2023a).

In developing regions like sub-Saharan Africa and South Asia, including India, SDGs are increasingly embedded within poverty eradication, digital empowerment, infrastructure development, and climate resilience frameworks. Nevertheless, these regions face major challenges, including funding shortages, fragmented policies, limited institutional capacity, and data gaps (Sachs et. al., 2022).

Emerging economies such as China and Brazil have embedded SDG-aligned principles within their growth agendas. China's emphasis on renewable energy and green infrastructure highlights its commitment to the 2030 Agenda, despite concerns about transparency and environmental trade-offs (World Bank, 2023). Brazil also integrates the SDGs with its social and economic development plans, but faces hurdles due to political instability and regional disparities (UNEP, 2023).

Least Developed Countries (LDCs) remain the most vulnerable. Their heavy dependence on foreign aid, coupled with fragile governance and conflict exposure, impedes progress. Climate vulnerability exacerbates existing inequalities, calling for greater international cooperation and financial assistance (UNDP, 2021).

From a governance standpoint, the High-Level Political Forum (HLPF) plays a central role in reviewing national progress via Voluntary National Reviews (VNRs), which foster transparency and peer learning (UN, 2023b). However, critics highlight the need for more rigorous evaluations, consistent indicators, and independent monitoring to make these reviews more impactful (UN DESA, 2023).

Moreover, civil society, academia, and the private sector have emerged as vital stakeholders. Multi-stakeholder partnerships, innovations in clean energy and sustainable agriculture, and corporate responsibility initiatives all support SDG implementation. However, disparities persist in the distribution of benefits both within and among countries (Beisheim, 2020).

In short, while the SDGs enjoy global endorsement, their implementation reveals stark contrasts in capacity, governance, and priorities. Achieving the 2030 Agenda demands stronger institutions, equitable financing, transparent data systems, and sustained global solidarity (UN Global Compact, 2022).

INDIA'S SDG FRAMEWORK

India, as a signatory to the 2030 Agenda, has demonstrated a structured and ambitious approach to SDG implementation. Given its socio-economic diversity, India has localized the SDGs within national development priorities, coordinated largely by NITI Aayog – the central policy think tank responsible for aligning national and state-level policies with the SDGs (UN, 2023a).

GOVERNMENT STRATEGIES: NITI AAYOG AND THE SDG INDEX

Launched in 2018, the SDG India Index is a key tool used to measure progress, foster competitive federalism, and enhance accountability. It assesses state-level performance across 17 SDGs using national data from government sources (NITI Aayog, 2023a). The Index classifies states into four categories:

- Aspirant: Score <50
- Performer: 50–64
- Front Runner: 65–99
- Achiever: Score = 100

The Index evaluates goals such as No Poverty (SDG 1), Quality Education (SDG 4), Gender Equality (SDG 5), Clean Water and Sanitation (SDG 6), and Climate Action (SDG 13). The rankings encourage states to improve their governance and public service systems (NITI Aayog, 2023b).

Further, NITI Aayog has collaborated with states to develop State SDG Action Plans, supported by thematic reports and capacity-building programs. These efforts are part of India's broader aim to integrate local development strategies with the global SDG framework, enabling a bottom-up approach (UNDP India, 2021).

However, significant regional disparities persist. Southern states like Kerala and Tamil Nadu often rank as “Front Runners” or “Achievers,” while several northeastern and central states remain in the “Aspirant” or “Performer” categories

(NITI Aayog, 2023a). These differences reflect variations in institutional capacity, resource availability, and implementation efficiency.

India's experience highlights the importance of decentralisation, real-time data, and multi-stakeholder engagement in SDG localisation. Efforts such as the Aspirational Districts Programme further underscore India's attempt to leave no one behind by targeting lagging regions (NITI Aayog, 2023b).

STATE-WISE PERFORMANCE AND REGIONAL DISPARITIES

The SDG Index highlights sharp regional disparities in India's development progress. Southern and western states generally perform better, while eastern and northeastern states lag on many indicators (Government of India, 2022).

Top-performing States (Front Runners/Achievers)

- **Kerala** consistently ranks highest in overall SDG performance. It excels in health, education, gender equality, and poverty reduction due to strong public service delivery and progressive social policies (NITI Aayog, 2023).
- **Tamil Nadu, Himachal Pradesh, Goa, and Karnataka** also perform well across a range of goals. These states benefit from better infrastructure, higher literacy rates, and effective governance.

Low-performing States (Aspirants/Low Performers)

- **Bihar, Jharkhand, Uttar Pradesh, and Madhya Pradesh** face significant challenges in areas such as education, health, sanitation, gender parity, and income inequality (NITI Aayog, 2023).
- The **northeastern states**, although rich in biodiversity and culture, struggle with connectivity, infrastructure, and institutional capacity, affecting their performance on many SDGs (North Eastern Council, 2022).

Union Territories Show Mixed Results

- **Chandigarh and Delhi** perform well on urban-related goals, while **Ladakh** and the **Andaman & Nicobar Islands** face logistical and infrastructural constraints (NITI Aayog, 2023).

These disparities underline the need for **localised and context-specific strategies**, tailored to the socio-economic conditions of each region. For example, while one state may need to focus on malnutrition and school dropout rates, another may prioritise environmental sustainability or renewable energy (NESCAP, 2021).

CHALLENGES IN PUBLIC ADMINISTRATION IN INDIA

Public administration in India operates within a complex socio-political and economic landscape. While it has played a pivotal role in nation-building and developmental efforts, several deep-rooted challenges hinder its effectiveness and responsiveness (Paul, 2019).

Bureaucratic Structures and Red Tape

India's administrative system remains influenced by colonial-era hierarchical structures, characterized by rigid rules and excessive formalism. This top-down command approach restricts flexibility, delays innovation, and leads to procedural delays – commonly referred to as “red tape” (Gupta, 2012). Such regulatory overload discourages citizen engagement and limits private sector participation in governance processes.

Limited Administrative Capacity

A major weakness in the Indian administration is the lack of adequate institutional and human resource capacity, especially at the grassroots level. There are persistent shortages in skilled personnel like teachers, engineers, and health workers, particularly in rural and backward regions (Mathur, 2013). District administration, the operational core of public service delivery, is frequently overburdened with schemes and lacks modern tools for implementation, such as data analytics and digital governance systems (NITI Aayog, 2021).

Inter-Agency and Inter-Governmental Co-ordination

Coordination failures between ministries, departments, and government tiers result in fragmented decision-making and resource wastage. Urban development, for example, is managed by multiple agencies working in silos – impacting overall efficiency. Political and administrative friction between the Union and States also disrupts policy alignment, with cooperative federalism still largely theoretical in implementation (Choudhry, 2017).

Accountability and Transparency Deficits

Although mechanisms like the **Right to Information (RTI) Act**, e-governance platforms, and citizen charters have been introduced, gaps in accountability persist. Corruption, rent-seeking, and lack of performance-based evaluations are prevalent (Baviskar, 2019). Public grievance redressal systems are weak, especially for marginalized communities, further eroding trust in administrative institutions.

Political Interference and Lack of Autonomy

Civil servants often work under significant political pressure, facing frequent transfers and politically motivated directives. This undermines their neutrality and continuity in public programs (Verma, 2020). Political interference adversely affects developmental planning and the implementation of long-term public policy.

Resistance to Reform and Innovation

Public administration in India tends to resist change. Reforms such as lateral entry, performance-linked promotions, and digital transformation face internal pushback due to institutional inertia and fear of scrutiny (ARC, 2008). This resistance weakens the adoption of adaptive governance practices crucial in a rapidly evolving policy environment.

Inadequate Decentralization and Local Governance Challenges

Despite the 73rd and 74th Constitutional Amendments, real empowerment of **Panchayati Raj Institutions (PRIs)** and **Urban Local Bodies (ULBs)** remains limited. Devolution of functions, finances, and functionaries has been inconsistent across states, affecting the autonomy and effectiveness of local governance (ARC, 2008).

ADDRESSING THE GAPS: WAY FORWARD

To reduce these disparities and strengthen SDG implementation across India:

- **Capacity building** at the district level is essential, especially in **Aspirational Districts** identified by NITI Aayog.
- There must be **greater coordination** between the Centre and states, along with **financial and technical support** (World Bank, 2020).
- **Data systems** need to be strengthened, particularly in rural and remote areas, to ensure better monitoring and evidence-based policymaking (MOSPI, 2022).
- **Multi-stakeholder partnerships** – involving civil society, private sector, and academia – must be leveraged to drive innovation and community-level impact (UNDP, 2022).

CAPACITY BUILDING AND INSTITUTIONAL REFORM INITIATIVES IN INDIA

To address persistent challenges in public administration and enhance the effectiveness of governance, India has initiated several capacity-building and

institutional reform efforts in recent years. These reforms aim to modernize administrative structures, improve human resource capabilities, introduce digital governance tools, and ensure more transparent, accountable, and citizen-centric service delivery.

Mission Karmayogi: National Programme for Civil Services Capacity Building (NPCSCB)

Launched in 2020, Mission Karmayogi is a transformative initiative aimed at reforming bureaucratic training and professional development. Its objective is to shift the focus from rule-based to role-based governance and build a future-ready civil service that is more agile, ethical, and responsive (Ministry of Personnel, 2020). This mission represents a paradigm shift in civil service training, aiming to foster collaboration, innovation, and accountability.

e-Governance and Digital India Initiatives

India's **Digital India Mission** (launched in 2015) has been pivotal in institutional reform and capacity building by embedding ICT into governance (MeitY, 2023). Major initiatives include: The **Digital India Programme** focuses on creating digital infrastructure, delivering digital services, and empowering citizens digitally. **e-Office** promotes paperless governance, improving transparency and efficiency in official procedures. **UMANG** (Unified Mobile Application for New-age Governance) offers access to hundreds of government services through one platform. Platforms like **Aarogya Setu**, **DigiLocker**, and **MyGov** demonstrated effective digital governance during the COVID-19 crisis. Additionally, initiatives like **CPGRAMS** (grievance redressal) and **e-Bhoomi** (land digitization) are streamlining citizen services.

Training Institutions and Modernization

India has focused on strengthening training institutions such as **LBSNAA**, which remains the apex institute for IAS training. It now incorporates modules on SDGs, ethics, and digital tools. Other institutions, such as the **Indian Institute of Public Administration (IIPA)** and **State Administrative Training Institutes (ATIs)** are being modernized to emphasize participatory and sustainable governance (IIPA, 2022).

The use of **MOOCs**, **blended learning**, and **public-private partnerships** in training delivery reflects a shift toward more interactive and skill-based pedagogy.

Good Governance Index (GGI) and Governance Reforms

The **Good Governance Index (GGI)**, developed by the **Department of Administrative Reforms and Public Grievances (DARPG)**, measures the performance of Indian states and UTs across governance indicators like health, law and order, and environment (DARPG, 2021). By enabling states to benchmark their performance and adopt best practices, the GGI promotes **competitive federalism** and continuous improvement in administrative outcomes.

Administrative and Policy Reforms

Several structural reforms have been introduced to make administration more efficient and dynamic, such as; **Lateral entry** has opened the door for domain experts from the private sector and academia. **360-degree feedback mechanisms** and **performance-linked incentives** have been instituted to reform the appraisal system. Over **1,500 outdated laws** have been repealed to simplify governance processes. **Outcome-based budgeting** and data-driven monitoring have become central to key schemes like **PM Awas Yojana** and **Jal Jeevan Mission**.

Localized Capacity Building and Aspirational Districts Programme (ADP)

Launched by **NITI Aayog** in 2018, the **Aspirational Districts Programme** targets 112 underdeveloped districts across India. It focuses on improving performance in areas like health, nutrition, education, and financial inclusion. Key elements include: Real-time **data dashboards** for monitoring outcomes. Capacity building in partnership with **civil society and private sector**. A central role for **District Collectors** in driving innovation and coordination. The ADP exemplifies **decentralized, data-informed, and outcome-oriented governance** in India.

Use of Data and Artificial Intelligence in Governance

India is increasingly using **data analytics, AI, and machine learning** for governance reforms. The **National Strategy for Artificial Intelligence** launched by NITI Aayog emphasizes AI applications in healthcare, agriculture, education, and urban infrastructure. AI-powered tools are now used for: Predictive governance and fraud detection. **Early warning systems** for natural disasters. Enhancing **transparency and decision-making** in welfare delivery.

CONCLUSIVE REMARKS

India's capacity building and institutional reform initiatives represent a substantial shift toward **transparent, accountable, and tech-enabled governance**. Flagship

programs like **Mission Karmayogi**, **Digital India**, and the **Aspirational Districts Programme** reflect a strategic commitment to building a future-ready civil service. However, **consistent implementation**, **political support**, and **investment in human capital** remain key to realizing the full potential of these reforms.

The challenges in India's public administration are institutional, systemic, and multifaceted. Addressing these issues requires robust reforms that target **bureaucratic modernization**, **decentralization**, **capacity building**, and **accountability enhancement**. A **citizen-centric**, **technology-enabled**, and **performance-driven governance model** is vital to reshape administration for an inclusive and sustainable development pathway.

India's SDG framework, spearheaded by **NITI Aayog**, represents a robust and evolving model of **federal cooperation and performance-driven governance**. However, persistent regional disparities highlight that achieving the SDGs will require not only **national commitment** but also **localized action**, **equitable resource distribution**, and **strengthened institutional capacity** at all levels.

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PUBLIC ADMINISTRATION & SDGs: INCLUSIVE GOVERNANCE FOR TRIBAL AND WOMEN'S WELFARE IN JHARKHAND

Ahmed Raza*

Abstract

The present research examines the critical role of public administration in advancing tribal welfare to achieve the Sustainable Development Goals (SDGs) through inclusive governance in Jharkhand. Inclusive governance, grounded in participatory decision-making, transparency, and accountability, is central to addressing the systemic marginalization of vulnerable groups – especially tribal communities and women who continue to face multidimensional disadvantages in access to education, healthcare, livelihood, and political participation. Drawing on Jharkhand's diverse policy initiatives the paper analyses how state-led interventions are aligning with SDG targets, particularly in reducing poverty, ensuring quality education, and promoting social equity. Special focus is given to examine the role of district administration towards inclusiveness. Jamtara district of Jharkhand has been taken as a case-study as community libraries were opened with other facilities for making the district an educational hub for youths. This paper has assessed the impact of community libraries on youth and their integration into the social mainstream. It concludes that strengthening public institutions, empowering local governance, and sustaining political will are vital to bridging gaps in service delivery and realizing inclusive development for tribal populations.

Keywords: Inclusive Governance, SDGs, Community Libraries, Schemes, Women.

INTRODUCTION

The Sustainable Development Goals (SDGs), established by the United Nations in 2015, aim to eradicate poverty, protect the environment, and promote peace and prosperity by 2030. Comprising 17 interconnected goals, they emphasize the need for integrated action across social, economic, and environmental dimensions. Central to the SDGs is the principle of prioritizing the most disadvantaged

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populations. The goals target critical global challenges such as poverty, hunger, disease, and gender inequality. Achieving these objectives requires the collective mobilization of creativity, technology, financial investment, and knowledge from all sectors of society to ensure sustainable development across diverse global contexts.

Inclusive governance is crucial for achieving the Sustainable Development Goals (SDGs), as it ensures that development processes are representative, participatory, and accountable. The 2030 Agenda emphasizes leaving no one behind, particularly through SDG 16, which advocates for inclusive institutions and access to justice. Inclusive governance enables marginalized groups to influence decision-making, enhancing institutional responsiveness and accountability. This participatory approach supports equitable access to resources and services, fostering outcomes aligned with the broader goals of poverty reduction, gender equality, and reduced inequality. Thus, inclusive governance is both an intrinsic value and a vital mechanism for achieving sustainable and inclusive development.

Jharkhand, a state in eastern India with a population of approximately 33 million, has a significant tribal presence, comprising around 26% of its population. Predominantly rural, with 78% living in non-urban areas, the state ranks sixth in India for its Scheduled Tribe population (Lohani & Nara, 2022). The Munda tribe, part of the Austro-Asiatic linguistic family, is one of the major indigenous groups. Census data since 1881 indicates a consistent decline in tribal population due to factors such as low birth rates, high mortality, migration, and industrialization.

STATEMENT OF PROBLEM

Tribal communities in India, including those in Jharkhand, continue to face persistent development challenges rooted in historical, economic, and socio-political marginalization. Land alienation remains a critical issue, as tribal populations are frequently displaced by mining, industrial projects, and infrastructure development. This has led to the loss of traditional livelihoods and cultural heritage. Access to education and healthcare is limited, with tribal literacy rates significantly lower than the national average and healthcare services remaining inadequate. Economic marginalization is compounded by the decline of traditional livelihoods due to deforestation and environmental degradation. Politically, tribal voices remain underrepresented in decision-making processes, and their concerns are often overlooked. Cultural erosion, driven by globalization and modernization, threatens the survival of indigenous languages and traditions. Despite efforts by the government and civil society, gaps in governance and public service delivery persist. Infrastructure, education, and health systems in tribal areas remain underdeveloped, and policies often fail to address the unique needs of these communities. Effective inclusion of tribal perspectives in planning and governance,

combined with targeted development interventions, is essential to break the cycle of marginalization and promote equitable and sustainable development for tribal populations in India.

According to the 2011 Census, Jharkhand's female literacy rate is 56.2%, below the national average of 65.5%, with tribal women lagging further behind. Many girls drop out before completing school, and few reach higher education. Tribal women face multiple barriers, including geographic isolation, poverty, language barriers, and restrictive cultural norms. Poor infrastructure, lack of secondary schools, inadequate transport, absence of female teachers, and insufficient sanitation facilities worsen the situation. Moreover, school curricula often fail to reflect tribal languages and experiences, making education less relatable and accessible, and resulting in continued exclusion of tribal girls from educational opportunities.

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

The theoretical foundation of this research is grounded in democratic and participatory governance theories that emphasize inclusion as central to achieving sustainable development. Robert Dahl's concept of polyarchy underscores the importance of pluralism and citizen participation in democratic processes. For Dahl, democracy is fundamentally about inclusion, and his framework identifies mechanisms through which diverse populations, including marginalized groups like tribal communities, can engage meaningfully in governance. Jürgen Habermas further contributes through his theory of deliberative democracy, which advocates for inclusive and rational public discourse as the basis for legitimate political decision-making. His emphasis on communication and consensus highlights the role of public dialogue in shaping equitable policies. Amartya Sen's capability approach adds a development perspective, linking inclusive governance to human well-being. Sen views participation not only as a means to achieve development outcomes but as a valuable end in itself, essential for social justice. These theoretical insights collectively inform this study by framing inclusive governance as both a democratic imperative and a development strategy. This framework guides the examination of public administration's role in promoting tribal welfare in Jharkhand, with particular attention to how inclusive governance practices can support the achievement of Sustainable Development Goals (SDGs) in historically marginalized regions.

Nupur Tiwari (2016) makes a comprehensive analysis of the PESA Act and its potential to empower tribal communities through decentralized, inclusive governance. It highlights the gap between the intended objectives of PESA and its weak implementation by state governments, particularly in extremist-affected, underdeveloped tribal areas. While the book effectively explores people-centric

governance and the importance of local participation, it lacks a focused assessment of how public administration contributes to achieving the Sustainable Development Goals (SDGs) in tribal regions. The research addresses this gap by specifically analyzing the intersection of public policy, administrative practices, and inclusive governance in Jharkhand from 2007 to 2024. It builds on the existing discourse by assessing how administrative structures and welfare schemes have supported or hindered tribal development in the SDG framework. This research thus offers a more targeted contribution by linking governance theory, implementation practices, and development outcomes. (Tiwari, 2016)

V. Srinivasa Rao (2021) did a critical examination of tribal livelihood and governance in India, emphasizing their interdependence in sustaining tribal communities. It explores how traditional tribal governance systems support livelihoods, particularly those based on forest and natural resources. However, since the 1990s, these resources have declined, forcing many tribes to migrate or rely on government welfare schemes. The volume offers valuable insights into the diversity of tribal livelihood practices and assesses the implementation of constitutional provisions like the Fifth and Sixth Schedules and the PESA Act. By analyzing region-specific challenges and responses, it contributes to understanding the complexities of tribal development. While it provides a rich overview of livelihood and governance issues, it leaves room for further exploration of how inclusive governance frameworks can align with national development goals like the SDGs. (Rao, 2021).

Pearl Tiwari (2023) explains the strong connection between tribal communities and sustainable development, showing how closely they live with nature. It points out that tribal people have a deep understanding of the environment, and their way of living naturally supports the goals of sustainable development. Even though they are among the most disadvantaged groups in the world, their eco-friendly lifestyle is important in fighting climate change and protecting nature. Still, they face many problems like being forced to leave their land, poverty, and being left out of important decisions. She highlights a big issue – governments and development programs often ignore tribal knowledge when making policies. The research paper tries to fill this gap by showing how helping tribal communities and using their traditional knowledge in policy-making can improve their lives and support sustainable development for everyone.

RESEARCH OBJECTIVES

- To analyze the role of public administration in promoting tribal welfare
- To assess how inclusive governance contributes to achieving SDGs in Jharkhand

RESEARCH QUESTIONS

- What is the current status of SDG implementation among tribal populations in Jharkhand?
- How effective is public administration in addressing tribal welfare through inclusive governance?

RESEARCH METHODOLOGY

This research employs a mixed method both quantitative and qualitative methodology, utilizing primary data from field work and secondary data from Economic Surveys and official reports of tribal welfare schemes. Content analysis of policy documents and scheme outcomes forms the core of the evaluative framework.

Jamtara, a district in Jharkhand with a significant Scheduled Tribe population (30.40%), was selected for the study focused on youth integration through community libraries. The Jamtara block, where STs comprise 31.2% of the population, was chosen for its accessibility and representativeness. Using a convenience sample of 80 respondents including youth, parents, teachers, and community leaders, a structured, Likert scale-based questionnaire was administered to assess the perceived and actual impact of libraries on education and mainstream inclusion.

TRIBAL COMMUNITIES IN JHARKHAND: A SOCIO-ECONOMIC PROFILE

Jharkhand, home to a significant tribal population, had 8.6 million Scheduled Tribes as per the 2011 Census, forming 26.2% of its total population. The state ranks 6th in India in terms of tribal population, with 32 tribal communities inhabiting rural and forested regions. Major groups include Munda, Santhal, and Oraon, among others, each with rich cultural traditions rooted in the Austro-Asiatic language family. (Tiwari & Phalachandra, 2024)

The tribal economy in Jharkhand is diverse, relying on agriculture, forest produce, hunting, fishing, livestock rearing, household industries, and wage labor. Despite agriculture being their primary occupation, lack of land rights, irrigation, and modern techniques restrict productivity. Forest produce like mahua and tendu leaves are crucial for livelihood, yet deforestation has severely impacted availability. Hunting and fishing are declining due to environmental degradation, while livestock serves as both sustenance and emergency income.

Socio-economic challenges are rampant. Illiteracy, superstition, and lack of awareness of government schemes hinder development. Most tribal communities reside in remote, inaccessible areas with poor infrastructure, limiting access to healthcare, education, and communication. Malnutrition, debt, and migration due

to unemployment are widespread. Tribal displacement from ancestral lands – often linked to industrialization and non-implementation of protective laws like the Santhal Pargana Tenancy Act – has exacerbated their marginalization. (Bhukya, 2018)

Environmental issues like deforestation and mining-induced displacement threaten their traditional way of life. Moreover, Plunging insurgency in some areas has intensified insecurity and underdevelopment. Although household industries and labour migration offer supplemental income, these remain unstable and unregulated. (Nayak, 2023).

To improve the socio-economic conditions of Jharkhand's tribal communities, effective land rights enforcement, better access to education and healthcare, sustainable livelihood options, and inclusive development policies are urgently needed. Addressing these core issues is essential for safeguarding both the identity and future of the tribal people in Jharkhand.

INSTITUTIONAL FRAMEWORK ADVANCING TRIBAL WELFARE FOR SDG IMPLEMENTATION IN JHARKHAND

The Government of Jharkhand has implemented several educational initiatives to uplift marginalized communities, particularly SC, ST, OBC, and minority groups. Key programs include scholarships for students from economically weaker backgrounds studying in Classes 1 to 10 and the establishment of ICT labs and libraries in 58 residential high schools, benefiting over 15,000 students. E-learning has been introduced to improve the quality of education.

To support higher education, the Top Class Scholarship aids tribal students, especially in engineering and technology, with 85 beneficiaries recorded in 2022–23. The Marang Gomke Jaipal Singh Munda Overseas Scholarship offers SC, ST, OBC, and minority students opportunities to pursue postgraduate studies in the UK, in partnership with the British government. (The Pioneer, 2022)

Other schemes include the Cycle Distribution Scheme, providing financial support to students for transportation, and the Reimbursement of Examination Fees, which encourages students to continue their education without financial barriers.

The Eklavya Model Residential Schools (EMRS) cater specifically to tribal students, with 7 schools currently functional and more in development. (Dash, 2018). Hostel facilities and infrastructure upgrades in higher education institutions aim to boost enrolment and learning outcomes. Although the Gross Enrolment Ratio (GER) temporarily declined during the Covid-19 pandemic, female enrolment has shown promising improvement, indicating narrowing gender gaps in education.

HEALTH INITIATIVES FOR ST COMMUNITIES IN JHARKHAND

The Government of Jharkhand has launched several health initiatives to address the healthcare needs of Scheduled Tribes (ST), particularly in remote and underdeveloped regions. The Medical Aid Scheme provides financial assistance of up to ₹10,000 for poor families from ST, SC, and OBC communities to meet urgent medical needs.

To cater specifically to the Pahariya tribal community, the government established 18 Pahariya Health Sub-Centres in the Santhal Parganas. (Choudhury, 2016). These centres are staffed with nurses, midwives, male health workers, and visiting doctors to ensure regular and accessible healthcare services.

Additionally, the state has set up 14 Kalyan Hospitals (formerly Meso Hospitals), each with a 50-bed capacity, in remote and Naxalite-affected areas. These hospitals meet Indian Public Health Standards and offer comprehensive services such as OPD care, inpatient treatment, maternal and child health services, sanitation, and diagnostic facilities. These efforts aim to ensure better health outcomes for Jharkhand's tribal communities.

GOVERNMENT INITIATIVES TO ERADICATE POVERTY AMONG TRIBAL COMMUNITIES IN JHARKHAND

The Government of Jharkhand has launched various initiatives to alleviate poverty among its tribal population, focusing on education, housing, water access, skill development, and infrastructure. Under the centrally sponsored ST Welfare Grants, 16 projects are active across eight sectors including education, art and culture, irrigation, and skill development. A total of ₹65 crore has been allocated to education, with other sectors receiving significant funding aimed at infrastructure upgradation and livelihood support.

To improve living conditions, the Birsa Awas Yojana provides 100% grants of ₹1,31,500 for housing to Particularly Vulnerable Tribal Groups. (Ghosh & Chatterjee, 2024). Similarly, the Shaheed Gram Vikas Yojana develops the birthplaces of tribal freedom fighters into model villages with basic infrastructure like water, solar electrification, and housing.

Access to safe water is addressed through rural drinking water supply schemes under Article 275(1) and SCA to TSP. Solar-powered drinking water systems have been installed in 15 districts, ensuring clean and sustainable water for rural tribal households.

The government has prioritized skill development to create employment opportunities. The Kalyan Gurukul programme, managed by ex-military personnel, offers residential skill training in sectors like construction and manufacturing.

Currently, 22 Gurukuls are operational. Additionally, Kaushal Colleges offer industry-standard vocational education, with a special focus on empowering tribal women.

These multi-sectoral interventions aim to reduce poverty by enhancing skills, improving living standards, ensuring access to basic services, and creating sustainable livelihood opportunities for Jharkhand's tribal communities.

The Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996 (PESA Act) is designed to protect tribal populations from exploitation by promoting self-governance through empowered gram sabhas and gram panchayats. Unique in its approach, the Act grants special authority to gram sabhas, enabling them to make decisions on local governance, resource management, and cultural preservation – powers not provided under other legislation. In Jharkhand, 16 out of 24 districts are fully or partially covered under PESA, reflecting the state's commitment to decentralizing power and safeguarding tribal rights. Significant progress has been made in implementing PESA across these notified areas. (Bara, 2022)

Despite the Forest Rights Act (FRA) being enacted to recognize and protect the rights of forest-dwelling communities through a democratic, Gram Sabha-led process, its implementation has largely failed. Bureaucratic delays, lack of political will, and weak institutional support have hindered the proper recognition of tribal forest rights. As a result, the Act's objectives remain unfulfilled, and many tribal communities continue to face insecurity over their traditional lands and resources.

The government of Jharkhand has taken significant steps to improve public service delivery and bring governance closer to the people, with the administrative machinery playing a proactive and innovative role. A notable initiative is the "Aapke Adhikar, Aapki Sarkar, Aapke Dwar" programme – Jharkhand's largest citizen outreach campaign. This initiative aims to ensure doorstep delivery of essential public services, increase awareness, and resolve grievances related to state welfare schemes.

The campaign covers key sectors such as housing, food and PDS, where efforts are made to distribute new ration cards, fix errors, and implement welfare schemes like the Dhoti-Saree distribution. It also addresses issues in pension and social security, ensures MGNREGA benefits reach migrant workers, and prioritizes job card distribution. The programme extends to healthcare, rural development, agriculture, animal husbandry, and land-related matters, while also focusing on the registration of unorganised workers under the e-Shram portal and promoting the Right to Service Guarantee Act.

To boost local employment and economic empowerment, the administration mandates that tenders under ₹1 crore be awarded to local entities. Companies investing in Jharkhand are required to give hiring priority to local residents.

In addition, the government has introduced the SAHAY scheme (Sports Action towards Harnessing Aspiration of Youth) to engage tribal and rural youth through sports, aiming to divert them from Maoist influence. Furthermore, a universal pension scheme offers ₹1,000 per month to all eligible beneficiaries, enhancing social security.

These efforts reflect a dynamic and citizen-centric administrative approach focused on inclusive development, service accessibility, and socio-economic upliftment of Jharkhand's people, especially in rural and tribal areas.

INCLUSIVE GOVERNANCE THROUGH THE MAIYA SAMMAN YOJANA: EMPOWERING WOMEN FOR SUSTAINABLE CHANGE

Inclusive governance becomes meaningful when every section of society – especially women – is integrated into the developmental process as active participants rather than passive beneficiaries. Jharkhand's Mukhyamantri Maiya Samman Yojana (MSY), launched in August 2024 by Chief Minister Hemant Soren, represents a transformative step toward this goal. The scheme provides direct financial support to women aged 18–50 through Direct Benefit Transfers (DBT), ensuring transparency and autonomy. Initially offering ₹1,000 per month and later increased to ₹2,500, the program reached over 56 lakh women in its first phase, directly addressing poverty and economic marginalization.

By transferring funds directly into women's bank accounts, MSY empowers beneficiaries to make independent financial decisions. This financial control promotes gender equality and reinforces women's role in household and community welfare. Studies have shown that when women manage income, spending patterns shift toward education, nutrition, and healthcare – core areas linked to the Sustainable Development Goals (SDGs). In Jharkhand, where poverty, malnutrition, and unemployment persist, MSY contributes to social resilience and equitable development.

Furthermore, the scheme's emphasis on banking inclusion marks a crucial step in building financial literacy among rural and tribal women. Linking Aadhaar, zero-balance accounts, and digital payments has created a new financial ecosystem where women gain access to formal institutions for the first time. This not only enhances transparency but also lays the foundation for long-term empowerment and participation in economic decision-making.

The Maiya Samman Yojana is thus more than a welfare initiative – it is a model of inclusive governance that integrates gender justice into policy implementation.

By empowering women as economic actors, the scheme strengthens public trust, fuels local economies, and promotes a more equitable, participatory, and sustainable development framework for Jharkhand.

CASE STUDY: INCLUSIVE GOVERNANCE AND ROLE OF DISTRICT ADMINISTRATION IN JAMTARA DISTRICT

Jamtara district in Jharkhand has long been synonymous with cybercrime, especially phishing scams that exploited the vulnerabilities of India's rapidly digitizing financial systems. However, in recent years, a concerted effort by the district administration has begun to transform Jamtara's image, from a hub of cybercriminal activity to a model of inclusive governance and public reform. This case study highlights the key interventions of district administration and their impact in mainstreaming youth and bringing them towards educational avenues and employment opportunities.

After the introduction of Unified Payments Interface (UPI) in 2014, Jamtara's youth began engaging in various forms of cyber fraud, including phishing, cloning apps, and using mule accounts to siphon stolen funds. (Srivastava, 2016). These acts were often facilitated through fake documentation and duping unsuspecting individuals. Jamtara quickly rose to infamy, topping national cybercrime charts. (Barnwal, 2018) The issue was not merely legal but deeply socio-economic, reflecting a lack of educational infrastructure, employment opportunities, and digital literacy.

The turning point came with the strategic and sustained efforts of then District Magistrate Faiz Aq Ahmed Mumtaz in 2020, who recognized that punitive action alone would not suffice. The district administration adopted a multi-pronged approach rooted in inclusive governance, public participation, and community-based development. Recognizing that lack of engagement and opportunity was a key driver of cybercrime, the administration focused on integrating youth into constructive and educational avenues.

A flagship initiative was the establishment of community libraries in all 118 panchayats across the district. More than 125 disused or dilapidated buildings were renovated and transformed into vibrant knowledge hubs including libraries. These libraries are funded through a mix of Corporate Social Responsibility (CSR) contributions and allocations from the government. Each library operates under the guidance of elected local representatives, with designated librarians, presidents, and treasurers.

To foster a culture of learning, especially during the Covid-19 pandemic, two teachers were appointed at each library to teach mathematics and science. The initiative particularly emphasized internet literacy, encouraging youth to explore the

positive potential of digital tools. The libraries stock books on general knowledge, history, political science, and resources for competitive exams, empowering students to prepare for civil services and other government roles. Police officials and local administrators also contribute by conducting coaching sessions and mentoring aspiring candidates.

Parallel outreach initiatives like awareness camps, community programmes, and counselling sessions helped steer youth away from cybercrime by offering them viable and aspirational alternatives. The administration's strategy of using education and engagement to replace illegal activity with meaningful opportunity has already begun to show results. According to the National Cyber Crime Reporting Portal, Jamtara, once ranked at the top, had dropped to 14th place among cybercrime-prone districts by early 2025. (Sharma, 2025).

This transformation demonstrates the impact of inclusive governance when coupled with visionary leadership, sustained community involvement, and a focus on long-term empowerment. Although challenges remain, the efforts in Jamtara stand as a promising blueprint for addressing socio-digital issues through participatory public administration and development-oriented governance. Therefore, field word based assessment has been done in order to experience the practical impact of opening of community libraries and other educational avenues by the district administration on the youth mind-set and their approaches.

JAMTARA DISTRICT: DATA INTERPRETATION AND METHOD OF DATA COLLECTION

Jamtara, a newly formed district carved out of Dumka in Jharkhand, comprises one subdivision and six development blocks – Kundhit, Nala, Jamtara, Narayanpur, Karmatanr, and Fatehpur. Notably, the district has a significant Scheduled Tribe (ST) population, constituting approximately 30.40% of its total demographic. For this study, the Jamtara block was purposively selected due to its representative population characteristics and accessibility. Within this block, the ST population accounts for 31.2% of the total, highlighting the importance of inclusive policy interventions in the region. To assess the impact of community libraries on youth and their integration into the social mainstream, a structured questionnaire was employed. Using a convenience sampling method, 80 respondents were selected for the survey. Data was collected through a Likert scale-based instrument, where respondents expressed their agreement on key aspects of the initiative, enabling both quantitative analysis and interpretive insights into community-level transformations. This questionnaire were administered to youth respondents, parents, community leaders, or teachers in the district to measure both perceived and actual impacts of the initiative.

Table 1: Questionnaire: Assessing the Impact of Community Libraries on Youth in Jamtara

Sr. No.	Questions	Scale				
		<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neutral</i>	<i>Agree</i>	<i>Strongly Agree</i>
1.	The opening of community libraries has increased youth engagement in educational activities in your village.	4	14	5	30	27
2	Community libraries have helped reduce the involvement of local youth in cybercrime-related activities.	39	17	2	12	10
3.	The resources and coaching provided in these libraries have encouraged youth to prepare for government and competitive exams.	3	6	2	23	46
4.	Internet literacy and awareness sessions conducted at the libraries have positively influenced how youth use digital tools.	40	17	5	10	8
5.	Community libraries have created a sense of purpose and direction among youth, helping them integrate into the social and economic mainstream.	15	3	6	23	33
	Total 80 respondents					

Source: Fieldwork.

INTERPRETATION

1. The opening of community libraries has increased youth engagement in educational activities in your village.

Out of 80 respondents, a significant majority (71.25%) either agreed (30) or strongly agreed (27) with this statement, indicating a broadly positive perception of community libraries in promoting education among youth. Only a small number (18 or 22.5%) expressed disagreement, while 5 remained neutral. This suggests that the libraries are effectively serving their educational purpose, drawing local youth away from unproductive or potentially harmful activities and toward structured learning environments.

2. Community libraries have helped reduce the involvement of local youth in cybercrime-related activities.

This item received a largely negative response, with 39 respondents strongly disagreeing and 17 disagreeing (totalling 70%), indicating skepticism about the libraries' impact in directly reducing youth involvement in cybercrime. Only 22.5% expressed any level of agreement. The data implies that while libraries may contribute to education, their role in addressing deeper issues related to cybercrime may be limited or indirect, possibly requiring supplementary interventions such as law enforcement engagement or targeted rehabilitation programs.

3. The resources and coaching provided in these libraries have encouraged youth to prepare for government and competitive exams.

This question received a highly positive response, with 23 respondents agreeing and 46 strongly agreeing (86.25% in total), suggesting that the academic support provided through libraries is both recognized and appreciated. Only 9 respondents disagreed or remained neutral. The result highlights the libraries' success in motivating and preparing youth for structured career pathways, especially in public service, marking a positive shift from informal or illicit economic activities.

4. Internet literacy and awareness sessions conducted at the libraries have positively influenced how youth use digital tools.

Responses to this item were predominantly negative, with 40 respondents strongly disagreeing and 17 disagreeing (71.25% total). Only 18 respondents perceived a positive impact. This suggests a gap between library-based digital education efforts and actual outcomes. The high disagreement rate may reflect inadequate training, limited access to digital infrastructure, or persistent misinformation about internet use. It underscores the need to strengthen internet literacy initiatives in both reach and depth.

5. Community libraries have created a sense of purpose and direction among youth, helping them integrate into the social and economic mainstream.

A majority of respondents expressed agreement, with 23 agreeing and 33 strongly agreeing (70% total), indicating a strong belief in the libraries' transformative role. Only 18 respondents were in disagreement or neutral. This positive feedback suggests that community libraries are not only educational tools but also platforms for identity-building, confidence enhancement, and mainstream integration – key goals of inclusive governance in Jamtara.

FINDINGS

Community Libraries Enhance Educational Engagement

A strong majority (71.25%) of respondents acknowledged increased youth participation in educational activities due to the establishment of community libraries. This reflects a clear success in promoting SDG 4 (Quality Education) and underscores the potential of grassroots governance efforts in redirecting youth toward constructive learning environments.

Limited Impact on Cybercrime Deterrence

Despite their educational value, community libraries have not significantly curbed youth involvement in cybercrime-related activities, as evidenced by 70% disagreement among respondents. This points to the need for integrated interventions, including digital ethics education, law enforcement collaboration, and counseling – suggesting a gap in addressing SDG 16 (Peace, Justice, and Strong Institutions).

Libraries as Catalysts for Career Aspirations in Governance

With 86.25% of respondents acknowledging that libraries have motivated youth to prepare for government and competitive exams, the data strongly supports the role of public administration in empowering tribal youth for upward mobility. This aligns with both SDG 8 (Decent Work and Economic Growth) and SDG 10 (Reduced Inequalities).

Internet Literacy Programs Show Weak Outcomes

The overwhelmingly negative response (71.25%) to internet literacy and awareness efforts suggests a disconnect between policy intent and field execution. This finding signals an urgent need to strengthen digital literacy infrastructure and pedagogy in tribal regions to fully realize SDG 9 (Industry, Innovation, and Infrastructure).

Libraries Foster Social and Economic Integration

With 70% of youth respondents affirming a newfound sense of purpose and direction, community libraries are emerging as effective tools for social inclusion and identity-building. This contributes directly to SDG 1 (No Poverty) and SDG 10, highlighting the importance of inclusive public institutions in fostering community integration and cohesion.

CONCLUSION

Achieving the Sustainable Development Goals in tribal regions like Jharkhand demands a multidimensional and inclusive approach, where public administration plays a pivotal role. This study underscores that inclusive governance—marked by decentralization, community participation, and equitable service delivery—is fundamental to realizing sustainable and equitable development. Jharkhand's targeted welfare schemes in education, health, poverty alleviation, and skill development reflect a growing recognition of tribal communities' unique socio-cultural contexts. Programs such as the Top Class Scholarship, Kalyan Hospitals, and Kalyan Gurukuls are meaningful steps towards socio-economic empowerment. However, challenges remain, especially regarding the under-implementation of the Forest Rights Act and inconsistent enforcement of PESA provisions. These shortcomings highlight the need for stronger institutional commitment and bureaucratic accountability. The "Aapke Adhikar, Aapki Sarkar, Aapke Dwar" initiative exemplifies proactive governance, but its success must be supported by systemic reforms and sustained political will. In conclusion, inclusive governance that ensures the participation of tribal voices in planning and execution, backed by responsive public institutions, is indispensable for achieving the SDGs in Jharkhand. Bridging governance gaps, recognizing customary rights, and investing in capacity building are key to transforming tribal welfare from policy intent to lived reality.

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EDUCATIONAL INCLUSION OF MUSLIMS FOR SUSTAINABLE DEVELOPMENT IN INDIA

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Abstract

The educational framework in the India has gone through significant transformation over the years, for the better and effective educational practices. However, certain sections of the Indian society like SCs, STs, women, minorities and differently abled persons have been deprived of even the basic educational needs. These sections usually suffer multifaceted discrimination like poverty, social exclusion, educational exclusion, and low employment opportunities etc. in addition to facing significant psycho-social challenges including depression, stress, diminished self-respect, inferiority complex and alienation from others. The issue became more significant in the wake of PM's mission of Viksit Bharat@2047.

It is a bitter fact that vulnerable sections like Muslims, SCs, STs, women etc. are educationally excluded, despite several politico-legal arrangements and recommendations of various Commissions. The present paper explores the various causes of educational marginalization of Indian Muslims and to suggest the strategies to include them in the mainstream not only by making them merely literate but educating them in a real sense for sustainable development.

Keywords: Education, SDGs, NPE, Muslims, SCs/STs.

INTRODUCTION

The advancement of the nation relies on the educational, social conditions, economic status and political conditions of its citizens. But education plays a pivotal role in empowering the people in all respect. For overall healthy development of a nation, it is very essential to utilize all the resources to its maximum extent in all dimensions like- education, economic, social and spiritual etc. As we know, the

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human resource is the most important resource of a nation. Therefore, it must be nurtured physically, mentally, emotionally and socially covering an holistic personality development of an individual, i.e., cognitive, affective and psychomotor domain. Education is one of the cornerstone indicators of the development in all facets of a person's well-being. A well-educated person can live a better life not only for himself and for his family but for the whole society. Also, as observed by the Sachar Committee Report (2006), unlike literacy, education is a comprehensive and holistic approach that empowers an individual to embrace a thoughtful and analytical outlook and raise awareness about new possibilities. Moreover, retention is also a key aspect of education and strengthening of these capabilities throughout years and the ability to pass on education to future generation for the purpose of generating the significant ripple effects observed by social scientists. Therefore, enrolment in a educational system becomes essential so as to acquire such benefits. Muslims, the largest minority in India, are even lagging behind in the literacy indicator of the government data, then what to talk about the four pillars of education – “*Learning to know, learning to do, learning to live together and learning to be (Delor's Report, 1996)*” as this provides a broad vision of quality education. The recent policy in education, National policy of education (2020) also aims to have an educational system i.e based on inclusion and equitable access to quality education irrespective of socio-economic circumstances. The main focus of the policy is on disadvantaged groups and minorities. Viksit Bharat (2047) to which the whole of the country is looking forwards also looking after the inclusion of Muslims through equitable access of education, promotion of mother tongue and regional languages. Modernisation of madrasas and empowerment of Muslim education are aimed to improve the situation.

MULTIFACETED EDUCATIONAL PROBLEMS OF INDIAN MUSLIMS

There is a general agreement among social scientists that educational problem has multiple facets - it includes societal problems, political issues, cultural and economic aspects. It also exhibits a progressive nature as it affects people in diverse ways and to varying extents throughout years. May be this concept has been arisen in response to dissatisfaction with approaches to any one dimension; there is no boundary/cut line. Most commonly, educational problem is observed to effect groups, involving discrimination against individuals based on their social identity and demographic characteristics such as racial, ethnic, gender, geographic or generational characteristics. These dimensions are interwoven and cyclic in nature. The relations between and within the educational problem may be differentiated in several ways.

CERTAIN FACTS AS POINTED OUT BY SACHAR COMMITTEE RELATED TO THE EDUCATIONAL PROBLEMS OF INDIAN MUSLIMS

1. **Literacy levels** amongst SCs/STs have accelerated more rapidly than **SRCs (Socio-Religious communities)**. This placed them ahead of Muslim community at the national level by the mid-1990s, while narrowing the disparities with 'All Others'. This phenomenon is prevalent across both gender and locality wise.
2. It is observed that generally a child attends school for only 4 years (**Mean Years of Schooling, MYS**). The MYS within Muslims is comparatively the lowest among all categories (about 3 years 4 months). A comparative assessment across SRCs both by gender as well as by residential location also points persistently low levels of MYS for the Muslim community.
3. Approximately 25 % of Muslim children aged 6–14-year age group possess either no formal schooling or have withdrawn from school without completion. This figure exceeds than that of any other SRCs analysed as part of reports finding. The rate of drop-outs remains significantly prevalent among Muslims and only SCs/STs exhibit a slightly increased withdrawal rate than Muslims.
4. In a broad sense, disparities in educational attainment and accomplishments across the SRCs remain substantial in both rural and urban contexts. Muslim educational outcomes stand at about or a bit higher than those of SCs/STs and considerably lower than those of other SRCs. At the national level the educational achievement of Muslims exhibits a declining trend as educational level increase. While 26% of those have completed matriculation, among Muslims this figure stands merely at 17%.
5. In India, a notable fraction of the total Muslim population is still lagging behind from the opportunities provided by higher education and the Muslims are a prominent group among the deprived communities. Based on Census data, just about 7 per cent of those aged 20 years and above are graduates or hold diplomas, this figure is considerably low , falling below 4 per cent in Muslims.
6. Though different committees have advocated for inclusive measures, in many states, a significant gap exists in the teaching of Urdu. Urdu medium schools are scarce in number in most States. And as expected, the academic performance of Urdu medium students remains considerably weak.

While the overall literacy rate of Muslims is moderately acceptable, disaggregate analysis of state data, by place of residence and by gender, presents a less flattering picture of the status of Muslims.

IDENTIFYING EDUCATIONAL PROBLEMS OF INDIAN MUSLIMS:

Different approaches may be explored to identify the educational problems in developing countries including:

- According to whether people do not benefit from modern opportunities in the educational field
- Those who fall below the average educational attainments
- Based on prior conception of groups who are marginalised in educational opportunities.
- By gathering the opinion of people regarding the educationally excluded groups.

In addition, the collection of multidimensional data about the educational problems group including not only education but also economic, sociocultural and political aspects is important if effective policies are to be formulated and systematically tracked and focussed on mitigating social disparities and promoting social inclusion in the educational field.

Some of the problems may be as the follows:

- Laissez-faire Attitude of the Hindu majority including governmental or non-governmental personnel. Even the attitude of the high-profile Muslims within the community for those Muslims who are so called backward seems to be not positive.
- Lack of Reservation for Muslims in education at different stages and employment taking into account of all the internal classification and divisions of Muslim population.
- Lack of Motivation and Scholarship for the Muslim children at all the levels of education.
- Insufficient number of quality schools/colleges providing the elementary, secondary, higher secondary and the higher education with Urdu as language of instruction.
- Higher wastage and stagnation among the Muslim children especially female children. Also, there are no policies or at least lack in the implementation of the policies to ensure the enrolment as well as retention of the Muslim Children until getting of the basic education.
- Poverty and illiteracy of Muslim parents in addition to being the first-generation learners they are not able to guide their wards for the targeted achievements.
- Insufficient availability of well-established public/private schools for Muslim children. Also lacking of the equal participation of Muslim Children in the resources of the schools/colleges.
- Lack of targeting policies and programmes as it has been observed by the Sachar Committee that when independence was achieved, the socio-economic status of SCs/STs was found to be of low level than that of Muslims. After that it appeared that, Muslims have remained largely excluded from the benefits of sustainable planning and they are operating within the framework of trickle

down or percolation effect, have experienced increasing marginalization and surpassed by other SRCs.

- A good deal of marginalization in the educational field can be attributed to historical reasons and found in caste classification and tribal isolation.

STRATEGIES FOR ADDRESSING EDUCATIONAL PROBLEMS OF INDIAN MUSLIMS

To face these problems of the Muslim Minority demands a strategic long-term approach to addresses the multiple and interconnected inequities experienced by the them. When only one aspect is prioritised e.g. education, progress cannot be achieved because other aspects also need interventions. It also considers the numerous ways and strategies through which governments, civil society, sponsors, contributors and global organisations should work together on a common platform to tackle the educational problems of Muslims. Following points may prove to be the important waves to tackle with the educational problems:

- Attitudinal change of the Hindu majority including governmental or non-governmental personnel. Even the change in the opinion and perceptions of the high-profile Muslims within the community for those Muslims who are so called backward. This demands both widespread and specific campaigns run by the government as well as NGOs. A community based developmental initiative, teacher training, teachers' professional development and awareness raising programmes have contributed to a significant and dramatic change in viewpoint around primary schools in Dharavi, Mumbai, known as the largest urban slum in Asia, Chatterjee (2003).
- Reservation for Muslims in education should be increased at all levels and employment, taking into consideration of all the internal stratification of Muslim community. Ranganath Mishra Commission (2007) recommends 15% reservation for Muslims within educational institutions & employment along with granting SC status to Muslim & Christian Dalits.
- Financial support for the Muslim children should be provided at all educational stages. The technical and professional education should also be included into the peripheral.
- Taking into account the significant number of Muslim children with Urdu as their first language, it should be noted that there must be sufficient number of schools/colleges in various states which provide education through the Urdu as medium of instruction in different stages. It should be insured by the schools/colleges that Urdu medium population should also be well equipped with English terminologies and language for greater chances of employability.
- After enrolment in a specific class, school/college should take on charge and work for the retention of child till he/she finishes at least basic elementary

and technical education. If the child leaves the school in between, the school/college should visit the parents and ensure his/her coming after taking into confidence the higher authorities.

- The Sachar Committee observes that the parental education holds greater relevance in understanding inter-community (especially Hindu-Muslim) disparities in enrolment than variables related to community development. Muslims are showing signs of progress and are addressing obstacles and challenges of the enrolment resulting from parental illiteracy and additional socio-economic barriers. This demands a targeted approach towards Muslim population. There is need to focus on Adult/Continuing education programmes and literacy awareness campaigns.
- Access to well-resourced government and working public/private schools for Muslim children is limited. An adequate number of public/private schools must be there to provide quality education. It should include not merely literacy but the minimum level of learning. The government school along with public/private schools should have adequate infrastructure and learning environment and the inclusion of the Muslim population must be ensured.
- Enrolment of Muslim girls is frequently disrupted by early marriage. As a result, dropout rates among Muslim girls are higher. This results from scarcity of schools accessible to girls without difficulty at lower levels of education, lack of residential facilities or hostels for girls, lack of female teaching staff, and inadequate provision of scholarships for higher education pursuits have also been highlighted by Sachar Committee. A need-based policy intervention and programme must be designed to make sure about enrolment. Focus should be on their retention in schools and it should be made sure that at least they finish the basic education.
- Upon gaining Independence, the economic and social condition of SCs/STs was identified as comparatively lower than that of Muslims. After that it appeared that, Muslims have remained largely excluded from the benefits of planning and while operating within the framework of trickle down or percolation effect, have experienced increasing marginalization and lagged behind from other SRCs as observed by the Sachar Committee. Therefore, in the words of the Committee itself, it must be insured that the “Muslim Minority including all within stratifications are getting the benefits of the various planning and governmental schemes.”

CONCLUSION

Overcoming educational problems constitutes the most basic pre-requisite for the building of a secular and democratic society. Moreover, talking about complete removal of any problem is myth, as it is a hitherto fact that any society is not free from challenge, only the matter is that we should not give up the hope, rather trial

should be at the optimal level. Regardless of the legislative provisions, policies initiatives enacted, it is the responsibility of the government to implement them effectively as it has been witnessed by the history that the ruling class often not willing to consider and think the so called backward and deprived section of the society at par. This was the reason to take the Education into the Concurrent list as early as 1975 to ensure the overpowering the centre on the state in the matter of dispute on the implementation of the policies regarding education. For effective move towards educational inclusionary process and outcomes; individuals, family, communities, institutions, NGOs, administrators, political leaders, bureaucrats, scholars and government must work collectively to become an agent. Time has come to study all these aspects and formulate concrete inclusive policies for social justice to each and every excluded section.

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COMMUNITY, CULTURE AND STATE: IS NORTHEAST INDIAN CULTURE CONDUCTIVE TO SDGS?

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Abstract

The concept of sustainability being embedded in a culture of community practices is an emerging area for research. These aspects are being reflected in global agenda of SDGs for achieving social sustainability, economic sustainability and environmental sustainability. Towards the achievement of these goals, the engagement, inclusion, and participation of citizens and the community at large as co-governance partners is pivotal towards realising the broad goals of sustainable development. Engaging citizens for sustainable development demands that the sustainable development goals be given local and contextual relevance to the realities of citizens and different communities. But often such rhetorical claims remain trapped within the neoliberal market lexicon, with citizens most often occupying non-participatory, consumer or tokenistic positions rather than being active participants in terms of rights, citizenship and effective public service delivery. With this background in mind, this paper will attempt to analyse the current performance outcome of SDG goals in Northeast states in India. It is one of the least developed regions of the nation and home to multiple identities in a demographically rich, biodiverse landscape. The finding of this study highlights how communities and their existing culture is conducive to achieving SDGs on one hand and state and governance poor in tapping this on the other. Finally it suggests to revive and bring a co-governance approach with their various community-representing community organisations.

Keywords: Community, Culture, Northeast Region, Governance, SDGs.

INTRODUCTION: CULTURE AND SUSTAINABILITY

Culture is about – the relationship among individuals within groups, among groups and between ideas and perspectives. It is concerned with identity, aspiration,

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symbolic exchange, coordination and structure and practices that serve relational ends, such as ethnicity, ritual, heritage, norms, meaning and belief. It is not a set of primordial phenomena permanently embedded but rather a set of contested attributes constantly in flux, both shaping and being shaped by social and economic aspects of human interaction. Further, there is no presumption that a cultural process is inherently 'good' or inherently 'bad' for economic and social development. But based on how power and agency work within a society, such cultural processes can be harnessed for positive outcomes for the society. The culture of a people living in Mizoram for centuries and using natural resources only to such an extent that these can regenerate can be considered sustainable if the value of resource protection and use, respectively, is used as a yardstick. Cultures are sustainable first and foremost in the sense that they function very effectively and are extremely long-lived. Cultural mechanisms are designed to promote stability and cohesion. According to Amartya Sen (2004), culture is part of the set of capabilities that people have – the constraints, technologies and framing devices that condition how decisions are made and coordinated across different actors.

Development is for people, and the idea of sustainability has been established to be closely linked. Sustainable development, as defined by the Brundtland Commission (1987), is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Sustainable development also shifts its focus from solely economic growth (measured by GDP) to a broader concept of "human development", emphasising the individual and their well-being, measured by quality of life and standards of living indicators beyond material progress[1]. Indeed, Pakistani economist Mahbub ul Huq said the real wealth of the nation is its people, and the purpose of development is to create an enabling environment for people to live long, healthy and creative lives. Brundtland Commission requirements for sustainable development (p. 65) included, for example, "a political system that secures effective citizen participation in decision-making" and "a social system that provides for solutions for the tensions arising from disharmonious development". Thus, the three pillars of sustainability – economic sustainability, environmental sustainability and social sustainability – were recognised. Some of these recommendations could be seen to have cultural ramifications. But overall there was little attention paid to culture in the Brundtland Commission's work on sustainable development.

Culture as the fourth pillar of sustainability was recognised and promoted by organisations like UCLG (United Cities and Local Governments) and the United National Economic Social and Cultural Organisation (UNESCO), emphasising its crucial role in building a sustainable future since 2010. UCLG calls on the United Nations, development agencies and the international community to explicitly integrate culture into programmes on sustainable development, promote the

international debate on the implications of the inclusion of culture as the fourth pillar of development and foster the inclusion of culture in international policy making. Later there was a bigger collaborative global campaign, “The future we want includes culture”, in the setting of the United Nations (UN) 2030 Agenda for Sustainable Development in 2015 [2].

SDGS, CULTURE AND GOVERNANCE

The United Nations in September 2015 adopted 17 Sustainable Development Goals (SDGs), which aimed at achieving “peace and prosperity for people and the planet” by 2030, tackling issues like poverty, inequality, and climate change. The seventeen goals are comprehensive and to be achieved by focusing on five P’s – people, planet, prosperity, peace and partnership. Within these, it recognises the importance of culture and community participation for achieving these sustainable goals. Many goals in themselves also directly address the aspects of building community and culture, such as promoting inclusive and resilient cities (SDG 11), fostering sustainable consumption and production (SDG 12), and ensuring peace, justice, and strong institutions (SDG 16). At the same time, active community participation by fostering collaboration and mobilising existing collective action to attain measurable progress towards global sustainability targets. The below Fig. 1 shows the indicators of culture in SDGs.[3]



Fig 1: Indicators of Culture in SDGs

The Indian model of ‘SDG Localisation’ by NITI Aayog attempts a bottom-up approach to suit the specific needs, challenges, and aspirations of communities to unlock the potential of local knowledge, resources, and expertise to design context-specific solutions that are more likely to be embraced by communities as ‘co-production’. This model is said to work on the ecological ecosystem approach of

public policy in the governance process. Such an approach to governance pushed public policies to create more space for community culture or citizens participation. Who is the main stakeholder as the receiver of public services? It drives the scholars to pay greater attention to the non-formal aspects of ‘politics’ and its ‘power relation’ in social structure. Failure of state-led and market-led approaches alone in the delivery of various services has also led to such approaches. This can be seen under the Denhardtian paradigm (2007) of governance as ‘co-governance’ with full priority to democracy, citizenship and service in public service. Stephen P. Osborne (2021) brought the Public Service Logic framework where citizens understand the services and create ‘value’ and not use as a product’ using an ecological ecosystem approach. The right to the city as conceptualised by H. Lefebvre and elaborated by D. Harvey has also questioned the right of everyone to participate in decisions that affect their lives. According to Ralph Linton (1945), the ‘culture of a society is a way of life of its members, the collection of ideas and habits, which they learnt, shared and transmitted from generation to generation’. The development of culture is a social activity, and over the years, it gets institutionalised. Such an inherent culture of community is also studied as social capital in terms of its social network available to the poor to access and mobilised resources in terms of bonding, bridging and linking based on its relationship. Helmke and Levitsky (2004) had already written that relationships with formal governance structures could be complementary, accommodating, competing and substitutive with informal social structures of governing institutions. In the process, participation, both normative (good) and instrumental (smart), has been a defining feature of public service reforms, as involvement, engagement, empowerment and co-production – each with its own nuances – nevertheless remain as core instruments. Within this frame, this paper will attempt to study how community and its culture in India’s northeast exist and how such practices relate to enhancing the SDGs achievement in the northeast region (NER).

INDIA’S NORTHEAST REGION AND SDGS

India’s northeastern states comprise the diverse identities of eight states – Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura – with a rich socio-cultural fabric and also support 50% of India’s biodiversity. As per the 2011 census, the region has a population of 45.5 million, comprising 3.7 per cent of India’s population, and geographically covers 8.05 per cent of the country’s total geographical area. The region is connected physically to the rest of India by a narrow strip of 27 kilometres known as the Siliguri corridor. It has many international boundaries with China in the north, Myanmar in the east, Bangladesh in the southwest, Nepal in the west and Bhutan in the northwest and is recognised as the eastern gateway for the country’s ‘Act East Policy’.

In terms of Human Development Index values for 2025 by Global Data Lab, the region is slightly lower than the national average with significant disparities among states. Except for the states of Sikkim, the remaining northeastern states are classified under the medium human development group, with Assam being the least achiever [4]. Geopolitically the region holds many potentialities in terms of international trade relations and natural resources, but at the same time the region is marked by communal and armed conflicts and lack of public services.

However, NER is considered one of the most ethnically and linguistically diverse regions in Asia, with each state boasting a range of cultures and traditions. The region is home to more than 220 ethnic communities, with each community having its own dialects and culture. One commonality of most of these communities is that they are still bonded in the locality/community by a solidarity of communitarian ethos and culture, which gives them a strong network of social capital institutions and organisations. Any idea of community is incomplete without understanding the idea of the 'sense of community' or the 'feeling of self-being embedded' in that community. In fact, ethnographic research shows that such an act of belonging to a community can mean different things in different groups. Communities follow informal customary ways of defining community membership, and they create identity around these customs and are often called 'culture', and they are often in alignment with the idea of sustainability with their environment and ecosystem. In fact, both modern and traditional systems of local governance are in the region.

These informal customs are extremely powerful. They shape a group's relationship with the world and, in turn, get shaped by social and economic aspects of human interaction. A positive outcome of this process has been the development and sustenance of the community harmoniously. Thus, the strong network of solidarity and reciprocity forms the instrumental sense of community to bring affirmative changes in its community governance. Beyond the explanation of rational choice for this collective community participation, it is said that all these actors in a community hold particular rights and resources as well as more or less acknowledged positions in the life of a locality. They are led by specific motivations (which, however, are not fixed once and for all) and are situated in particular "logics of appropriateness" (March/Olsen 1989). What can these motivations be? Batson (2002) discussed four types of motivation for community participation, namely egoism, altruism, collectivism, and principles. Differentiation is based on the identification of a unique ultimate goal for each motive. For egoism, the ultimate goal is to increase one's own welfare; for altruism, it is to increase the welfare of another individual or individuals; for collectivism, to increase the welfare of a group; and for principles, to uphold one or more moral values. For example, the Mizo community in Mizoram is guided by the social moral value of 'Tlawm ngaihna', which means social solidarity, and the then institution of 'Zawlbuk', which would

mean self-sacrifice for the service and well-being of the community. Based on such an ethos, contemporary Mizo society has various social collectivises and associations working in various capacities for upholding the socio-political goods of the community. Or the idea of '*Khullan Laman*' among the Meiteis in the State of Manipur.

Northeastern states, along with the rest of India, took an active participation in trying to achieve the SDG goals. The states in the region have gone on localisation of the SDGs, and each state has made its vision document for 2030 to achieve the SDGs as early as by 2016 by Assam or as late as 2021 by Nagaland. Already, the North Eastern Region Vision 2020, launched in 2008, worked as a precursor to the SDGs, emphasising the role of self-governance and participatory development, among others, for the development of the region. "While designing local planning approaches, care must be taken to harmonise the functions and rights of traditional tribal self-governing village institutions such as the Syiemships and Dorbars of the Khasi hills of Meghalaya, the Kuki-Impi of the Kukis in Manipur, the Clubs of the Manipur valley and peoples' organisations of various tribes in Nagaland, with institutional mechanisms designed for modern development and service delivery." (North Eastern Region Vision 2020 Vol. 1, pp. 18-19).

To analyse its progress of SDG achievement in the region, firstly NITI Aayog, the Ministry of Development of Northeast Region (MDoNER) and UNDP (United Nations Development Programme) came out with two NER SDG index reports (2021-22) for the 120 districts within the 8 states for ranking with a list of 84 indicators across 15 SDGs and 50 targets. In this report, 64 districts with scores ranging from 65 to 99 came in the front runner, while 39 districts in the range of 50 to 64 scores were in the performer category. This was done to identify the crucial areas and foster competition. All districts in states like Sikkim with already a better HDI and Tripura fell in the front runner category, while there were no districts in the aspirant (0-49) or achiever (100) categories in the whole region. According to this report, NER has put a great deal of effort into achieving the SDGs, which could be attributed to its old, traditional culture of sustainability in its own practices, like

1. Top performer in SDG-15 Life on Earth, which includes indicators such as forest cover, wasteland and wildlife, which is not a recent phenomenon in the region. Twelve districts of the region find mention in the achievers category and 86 districts in the category of front runners. Besides the physical geographical terrain, one very reason is many communities practise the culture of worshipping sacred groves and forest deities since time immemorial, leading to the preservation of forests and their environment (KA Devi 2004), and even the most common agricultural practice of Jhum cultivation has now been promoted as a scientific and sustainable traditional practice. [5]

2. It has also done well in Goal 6 (clean water and sanitation), where 75 per cent of the district came in as a front-runner on indicators such as sanitation and drinking. The first state to declare itself open defecation-free in India is Sikkim. While open defecation is a significant issue in some parts of India, it's not a widespread cultural practice in Northeast India, where rates are significantly lower than the national average. Cleanliness and personal hygiene have been part of community culture in the region. Mawlynnong Village in Meghalaya, Khonoma Village in Nagaland, Rangpara Village in Assam, Vanghmun Village in Tripura, Mokokchung Village in Nagaland, Darap Village in Sikkim, Ziro Valley in Arunachal Pradesh and Mapao Zingsho Village in Manipur were already in the news for their cleanliness culture. In the writing of colonial British writers, we find comments on the culture of sanitation on Meitei in Manipur. On the issue of culture of sanitation of Meitei, Brown writes, "In their habits generally, the Manipuris are clean and they bath their bodies frequently (R.C. Brown, Statistical Account of Manipur, 1873, p. 57).
3. Districts from Sikkim, Manipur, and Mizoram already achieved zero hunger goals. The culture of solidarity and resource-sharing practices of many in the community is directly linked to poverty reduction in the region.

However, in the same report, NER lags behind in Goal 9 (Industry, Innovation and Infrastructure) with 28 districts in the aspirant category in areas such as roads, broadband and mobile connectivity.

And the reports also stress the intervention needed in the areas of Goal 4 (quality education), Goal 11 (sustainable cities and communities) and Goal 13 (climate action). These goals are clearly the state-centric responsibilities which required a strong political will as well as stability of law and order situation in the region.

As a result of the previous assessment and attention by the state in the latest SDGs India report, 2023-24, Assam and Manipur have made the most progress, followed by Tripura, Arunachal Pradesh, Sikkim, and Mizoram under the front-runner category, while Meghalaya and Nagaland are still in the "performer category".

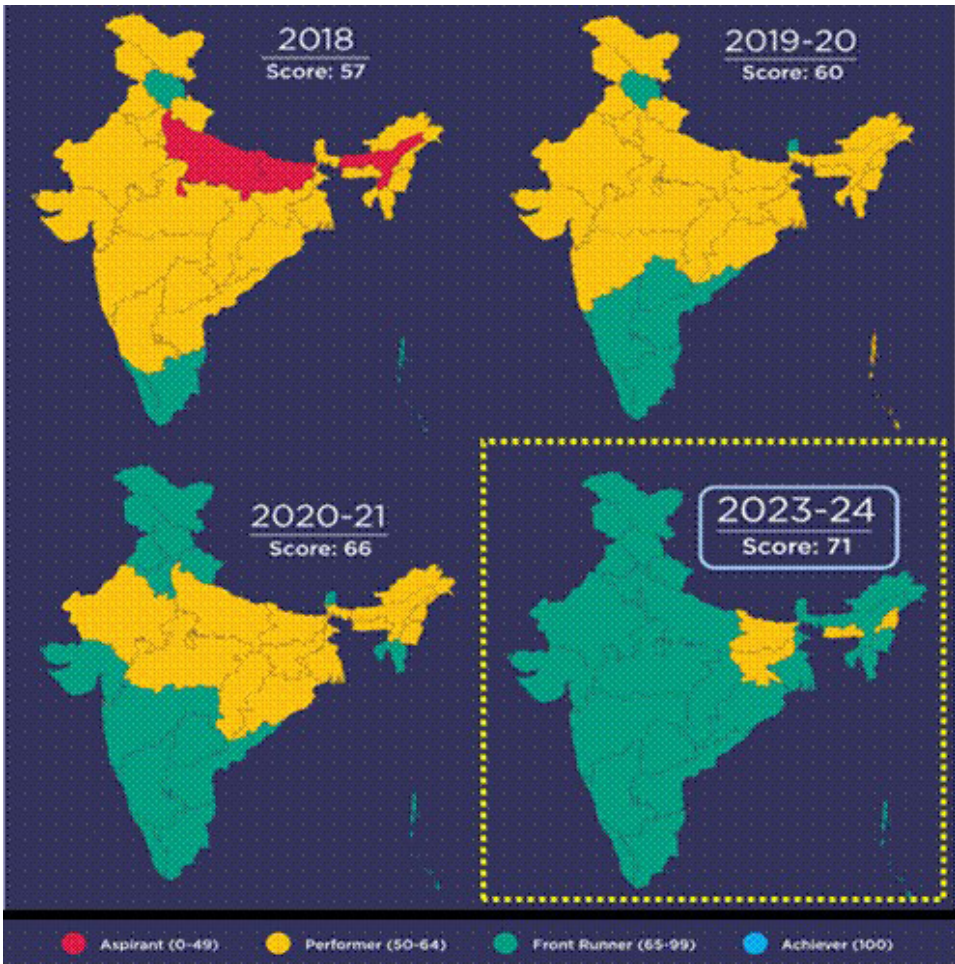


Fig 2: SDG India Index 2023-24 score (Source: <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2032857>)

CONCLUSIONS

Thus, we see that in the NER community, culture of social capital and solidarities has a significant role to play in the attainment of SDGs. Though community-based institutions were already recognised as one key partner for “co-governance” by NER vision documents as early as 2018, many potentials of such institutions as key partners to foster participative governance remain untapped. In a state like Mizoram, people and civil society led forums like the Mizoram People’s Forum (MPF) in 2006, which was responsible for sanitising electoral politics and is nationally well acclaimed. The MPF enforces the model Code of Conduct of the Election Commission of India and effectively pursues its goals and objectives with Biblical teaching with

all political parties of Mizoram. Local community-based organisations known as Young Mizo Association members, as MPF stakeholders, helped to enforce a free and fair election process as well as the lowering of the election expenses in the State Assembly and Lok Sabha members elections in Mizoram (N. Irina, 2023). The bottom-up approach of development with group-based phenomena and capabilities can ensure the preservation of distinct culturally determined perspectives and ensure inclusivity and the poor have a voice and opportunities for any redressal of grievances as well. Such a cultural lens of public policy and governance can address the problems of trust, inequality and empowerment. But most donor agencies and states come with lots of enthusiasm for a participatory approach, but the programme remains too much driven by a supply-led approach and corruption-ridden rather than responsive and accountable.

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ENDNOTES

1. For an exposition of human development as enlarging individual choice, see Sen (1990).
Sen, Amartya (1990), "Development as capability expansion" in Keith Griffin and John Knight (eds), *Human Development and the International Development Strategy for the 1990s*, (London: Macmillan).
2. The nine networks involved in this campaign were (in alphabetical order): Arterial Network, Culture Action Europe (CAE), International Council on Monuments and Sites (ICOMOS), International Federation of Arts Councils and Culture Agencies (IFACCA), International Federation of Coalitions for Cultural Diversity (IFCCD), International Federation of Library Associations and Institutions (IFLA), International Music Council (IMC), Latin American Network of Arts for Social Transformation, and United Cities and Local Governments (UCLG) Culture Committee (Agenda 21 for culture/AC21).
3. Downloadable at <https://whc.unesco.org/document/179279>.
4. Subnational HDI (v8.1) <https://globaldatalab.org/shdi/table/shdi/IND/?levels=1+4&interpolation=0&extrapolation=0>
5. Mohammad Thanvir, what are the impacts of Jhum cultivation on biodiversity? Accessed from <https://thinkwildlifeoundation.com/what-are-the-impacts-of-jhum-cultivation-on-biodiversity/>

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ROLE OF PANCHAYATI RAJ INSTITUTIONS FOR HEALTH SERVICES AT VILLAGE LEVEL: A STUDY OF COMBATING ANEMIA AMONG PREGNANT WOMEN IN TELANGANA

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Abstract

Anemia among pregnant women remains a pressing public health challenge in rural India, with Telangana reporting alarmingly high prevalence rates exceeding 90% in some areas. Despite national efforts to address Iron and Folic Acid (IFA) deficiencies, barriers such as inadequate counselling by Auxiliary Nurse Midwives (ANMs) and limited community engagement continue to impede progress. This study investigates the systemic and behavioral gaps in IFA supplementation programmes and explores the potential of Panchayati Raj Institutions (PRIs) in promoting community-based interventions to reduce anemia prevalence. Using a qualitative case study approach, the research was conducted in Aziznagar Gram Panchayat in Telangana's Rangareddy district. Data were collected through Focus Group Discussions with pregnant and lactating women, elected representatives and ANMs, alongside field observations at Anganwadi centers and Primary Health Centers. Key challenges identified include poor dietary intake, cultural misconceptions, inadequate counselling and logistical barriers to supplement access. While frontline health workers such as Anganwadi and ASHA workers play a crucial role, they often lack adequate training and resources. PRIs have the potential to bridge these gaps by mobilizing local resources, supporting health education initiatives, and facilitating better healthcare service delivery. This study underscores the need for integrated, community-centric strategies to combat anemia, including improved counselling services, targeted nutrition education, digital health interventions and awareness campaigns. The findings contribute actionable insights aligned with the Localisation of Sustainable Development Goals, particularly in achieving better maternal health outcomes through localized governance and collaborative rural development.

Keywords: Anemia, Counselling, ANM, ASHA, Aziznagar, Panchayati Raj Institutions.

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INTRODUCTION

The Sustainable Development Goals (SDGs), declared by the United Nations in 2015, comprise 17 global objectives aimed at addressing critical issues such as poverty, hunger, health, education, gender equality and environmental sustainability, with a target for achievement by 2030 (Pandey et al., 2025). As a comprehensive global framework, the SDGs provide a roadmap for sustainable development and India has actively aligned its policies with these goals under the United Nations agenda. To drive progress toward these objectives, the Government of India, in collaboration with NITI Aayog, Central Ministries, State Governments, UN agencies and PRIs, has undertaken various initiatives to meet the 17 SDGs and their 169 associated targets. A key strategy involves integrating local governance structures particularly Panchayats into national sustainability efforts. The Ministry of Panchayati Raj plays a critical role in this process, using tools such as the Panchayat Development Index (PDI) (now known as the Panchayat Advancement Index (PAI)) to assess grassroots progress and develop localized strategies for inclusive rural development.

Given the cross-cutting nature of the SDGs, their effective implementation requires coordinated efforts across multiple governmental departments. To address this complexity, the Ministry of Panchayati Raj has streamlined the 17 SDGs into nine broad themes, each aligned with village-level governance and development. This thematic approach ensures collaborative interventions across various ministries. One such theme is the Healthy Village initiative, which encompasses multiple SDGs, including Zero Hunger, Good Health & Well-being, Quality Education, Gender Equality, Clean Water & Sanitation and Sustainable Consumption & Production. The transformation of a Gram Panchayat into a Healthy Village serves as a practical application of this thematic approach. This transformation requires the efficient operation of healthcare facilities, including sub-centres, Health & Wellness Centres, telemedicine services and Primary Health Centres (PHCs). Additionally, preventive public health measures such as clean drinking water access, waste management, and the promotion of healthy lifestyles are crucial components. Achieving adequate nutrition and overall well-being demands coordinated efforts from multiple government departments, including Health, Ayush, Women & Child Development and Drinking Water & Sanitation, alongside non-governmental organizations, academic institutions and youth groups. The Local Indicator Framework (LIF), with its 26 Local Indicators, provides a systematic mechanism for monitoring and evaluating grassroots progress toward these goals (MoPR, 2022).

However, despite these efforts and frameworks aimed at improving rural health and nutrition, several persistent challenges continue to hinder the effective implementation of key interventions, particularly in addressing anemia among pregnant women.

Key barriers to program success include inadequate counselling by Auxiliary Nurse Midwives (ANMs) and limited engagement of PRIs in community-level awareness initiatives. In rural areas, particularly in States such as Telangana, anemia prevalence can exceed 90%, driven by factors like poor dietary intake, low socioeconomic status, and limited access to healthcare (Bhushan et al., 2024; Gopinath et al., 2016). Nutritional assessments reveal that the average iron intake among pregnant women in these regions is alarmingly low, often less than half the recommended daily allowance (Tejaswini et al., 2017). The high prevalence of anemia among pregnant women in rural Telangana highlights a pressing public health concern that requires targeted interventions. According to Mangla and Singla (2016), upto 98% of pregnant women in rural India are anemic, with 41.76% suffering from mild anemia and 15.88% experiencing severe anemia. These figures underline the urgency of addressing anemia, particularly among vulnerable groups such as younger pregnant women. G & Patil (2021) also reported that 54.2% of anemia cases were found in women aged 21–25 years, with those having multiple pregnancies at increased risk. This further emphasizes the compounded health risks faced by women with repeated pregnancies.

Socioeconomic factors also play a significant role in the persistence of anemia. As noted by Bhushan et al. (2024), a lack of awareness regarding proper dietary practices, combined with inadequate antenatal care and limited access to IFA supplementation, contributes to the prevalence of anemia. Furthermore, low socioeconomic status and limited educational opportunities exacerbate these issues, particularly among rural populations. To address these challenges, targeted educational programs and economic empowerment strategies must be developed and implemented to promote better health outcomes and reduce anemia rates.

The potential for PRIs to address anemia through localized, community-based interventions is significant. By mobilizing communities, organizing health programs, and launching educational campaigns, PRIs can increase awareness of anemia and its consequences (Williams et al., 2020). In addition, PRIs are in a position to allocate resources to ensure the availability of nutritional supplements and healthcare services, helping to overcome systemic barriers to anemia prevention and treatment (Susheela et al., 2010). Their role in monitoring and evaluating anemia reduction initiatives allows for tailored interventions that meet specific community needs, ensuring more effective and relevant health solutions (Dutta et al., 2023).

Counselling has been identified as a critical component of successful anemia management. Martha et al. (2024) demonstrated that counselling interventions can significantly increase knowledge among pregnant women, with knowledge scores improving from a mean of 15.54 to 96.79. Similarly, educational programs have been shown to raise awareness levels from 65% to 80% (Idyawati et al., 2024). The

role of ANMs is crucial in detecting anemia, providing treatment, and offering dietary counselling. Furthermore, PRIs play a vital role in fostering this concept by integrating preventive and curative healthcare measures at the community level. This study explores the systemic and behavioral challenges associated with IFA supplementation programs in rural Telangana. It also emphasizes the potential of PRIs in enhancing community awareness and support, ultimately aiming to provide actionable recommendations to reduce anemia prevalence and improve maternal health outcomes.

OBJECTIVES

The following are the objectives have been addressed in this study:

- To examine the prevalence and severity of anemia among pregnant women in rural Telangana;
- To assess the effectiveness of current counselling practices by ANMs;
- To evaluate the role of PRIs in promoting awareness and facilitating community engagement; and
- To identify barriers to IFA compliance and propose targeted interventions.

METHODOLOGY

Setting and Sample

A multistage sampling method was adopted for this study. The first stage involved selecting the district, followed by the mandal and finally, the Gram Panchayat. Azelnagar, Gram Panchayat(GP) in the Rangareddy district of Telangana, was chosen randomly. Gram Panchayat includes three Anganwadi centers, one Primary Health Center (PHC) and four ASHAs (Accredited Social Health Activists). The study sample consisted of 15 pregnant women and 15 lactating mothers, who were selected randomly, along with randomly chosen Elected Representatives (ERs).

DATA COLLECTION

Focus Group Discussions were conducted with pregnant women, ERs and ANMs to explore their perspectives on anemia and compliance with IFA supplementation. These discussions provided a nuanced understanding of the barriers and facilitators to IFA adherence, including cultural beliefs, misconceptions, and logistical challenges. Additionally, observational data were gathered from Anganwadi center, PHC during Village Health and Nutrition Day (Wednesday) and ASHA workers, offering insights into local dietary practices and health-seeking behaviors. Contacts were established with Anganwadi workers, ANM and pregnant women, who were

informed that the study was conducted for academic purposes. This collaborative approach fostered trust and facilitated the collection of valuable, community-specific data to inform targeted interventions.

RESULTS AND DISCUSSION

The high prevalence of anemia among pregnant women in rural Telangana, particularly in areas like Aziznagar, reflects a significant public health challenge that demands localized and targeted interventions. According to Mangla and Singla (2016), A vast majority of pregnant women in rural India are affected by anemia, with a significant number experiencing mild forms of the condition and a notable portion suffering from more severe cases. This is consistent with field observations in Aziznagar, where anemia remains widespread among pregnant women, especially those in the 21–25 age group. These findings underscore the need for context-specific strategies to address the compounded health risks faced by younger, multiparous women in rural Telangana.

Nutritional assessments in Telangana, including tribal and rural regions surrounding Aziznagar, reveal persistent deficiencies in iron and riboflavin intake. Tejaswini et al. (2017) found that 30% of women in tribal areas exhibited signs of micronutrient deficiencies, with an average caloric intake of only 1800 kcal – well below recommended levels. This highlights the urgent need for nutrition education and dietary behavior change communication (BCC) in villages like Aziznagar. Promoting the consumption of iron-rich foods and improving overall dietary practices are critical steps toward mitigating the root causes of anemia in these communities.

Socio-economic constraints further aggravate the anemia burden in Aziznagar. Bhushan et al. (2024) emphasized that a lack of awareness about proper dietary practices, coupled with limited antenatal care and insufficient access to IFA supplements, significantly contributes to high anemia prevalence. These issues are particularly acute among women with low socio-economic status and limited formal education. In Aziznagar, many women lack access to reliable nutrition information and healthcare services, making them especially vulnerable. Addressing these barriers through locally tailored educational programs and economic empowerment initiatives is essential for improving maternal health outcomes in the region.

The role of PRIs in Aziznagar is critical for delivering community-based solutions. PRIs can mobilize local resources, organize awareness campaigns, and coordinate with frontline workers to improve health literacy (Williams et al., 2020). Their capacity to allocate funds for IFA supplements and facilitate access to healthcare services is vital in overcoming structural challenges to anemia

prevention (Susheela et al., 2010). Moreover, PRIs' engagement in monitoring anemia reduction initiatives ensures that interventions are aligned with local needs and realities (Dutta et al., 2023).

Counselling has emerged as a significant factor influencing IFA compliance in Aziznagar. Martha et al. (2024) showed that counselling interventions can dramatically improve knowledge among pregnant women, with mean knowledge scores rising from 15.54 to 96.79. Idyawati et al. (2024) similarly found that awareness levels increased from 65% to 80% through structured educational programs. However, observations in Aziznagar indicate critical gaps in counselling practices. ANMs were found to be underprepared to address pregnant women's hesitancy regarding IFA supplementation. This aligns with findings by Vijayan Smitha et al. (2024), who identified insufficient counselling (93.5%) as the leading cause of IFA noncompliance among postnatal women.

Further community discussions in Aziznagar revealed that while some women had limited exposure to short videos explaining the benefits of IFA, many expressed the need for personalized, culturally sensitive guidance. Anganwadi and ASHA workers in the village are central to this process but are often constrained by inadequate training and resources. Enhancing their capacity through structured training and integrating digital tools – such as video-based health education—could substantially improve awareness and behavioral change (Ningsih et al., 2022; Pratiwi, 2022).

Another pressing issue in Aziznagar is the side effects associated with IFA consumption, which discourage consistent intake. Globally, women have reported managing these effects through self-efficacy and guidance from healthcare professionals (Siekman et al., 2018). Health education in Telangana should, therefore, incorporate practical counselling on managing IFA-related side effects to improve adherence (Bahati et al., 2021; Wemakor et al., 2022).

To achieve sustainable reductions in anemia rates in Aziznagar and similar settings, it is crucial to establish effective screening mechanisms, improve counselling approaches, and design culturally relevant nutrition education strategies. Structural inequalities – such as poverty, illiteracy and patriarchal norms – must also be addressed to ensure women's full access to healthcare and nutritional resources. As suggested by Vijayan Smitha et al. (2024), a comprehensive, multi-sectoral strategy is necessary to tackle these systemic issues and empower women in rural Telangana.

SUGGESTIONS

Suggestions for Addressing Anemia and Improving Healthcare in Telangana State

- Addressing anemia among pregnant women in Telangana requires a comprehensive approach involving nutritional education, community engagement, and strengthened healthcare services.
- Regular training programs should be conducted for ANMs to enhance their counselling capabilities.
- Nutrition awareness campaigns must be implemented, ensuring the efficient distribution of IFA supplements through PRIs.
- Monitoring committees should be established within PRIs to oversee and evaluate the effectiveness of health interventions.
- Gram Sabhas should be utilized to disseminate information on malnutrition prevention, involving relevant departments and frontline workers such as ASHA and Anganwadi workers.
- Additional resources should be allocated to PHCs to address nutritional deficiencies and support anemia reduction efforts.
- Health camps should be organized in collaboration with PRIs, healthcare providers, and community stakeholders.
- Family members must be actively involved in encouraging and supporting pregnant women's adherence to IFA supplementation programs.
- Sharing beneficiaries' experiences regarding healthcare services at the village level – via Gram Sabhas, public gatherings, and social media – should be promoted.
- Strengthening digital infrastructure is essential to expand access to telemedicine services at the household level.
- Gram Panchayats should be encouraged to take a proactive role in addressing challenges such as vaccine hesitancy and promoting the use of public healthcare services.
- Awareness on health and nutrition should be generated among pregnant and lactating mothers.
- Anganwadi centers should be fully activated, and health infrastructure such as Health and Wellness Centers should be upgraded.
- Proactive water quality testing should be conducted to safeguard community health.
- Health-related activities must be incorporated into GPDPs to align local governance with health objectives.
- Local agricultural practices, such as promoting the cultivation of moringa and the use of millets, should be encouraged to improve community nutrition.
- Alcohol consumption should be regulated or banned to enhance overall public health.

- Gram Sabhas should be leveraged for nutrition education campaigns, engaging frontline workers and departmental representatives.
- Body Mass Index assessments for schoolchildren should be conducted regularly, with health check-ups facilitated by Community Health Officers through Gram Panchayats.
- Village-level screening programs for non-communicable diseases and cancer in elderly populations should be made mandatory, with active involvement from Gram Panchayats.
- Dedicated spaces and centers for elderly care should be established in rural communities.
- Health and Wellness Centers, under the leadership of Gram Panchayats, should offer nutrition education, yoga sessions, and mental health counseling.
- NGOs should be involved in health and nutrition awareness initiatives.
- Elderly sports events should be organized to promote physical activity and well-being.
- Access to wheelchairs, physiotherapy services, and designated Health Days for the elderly should be ensured.
- Public awareness campaigns should be conducted through social initiatives, Gram Sabhas, and ward sabhas.
- Mahila Sabhas and Bal Sabhas should be organized to address specific health concerns.
- Health camps should be conducted in collaboration with the Health Department to improve access to medical services.
- Regular health and sanitation committee meetings at the Gram Panchayat level should be held to monitor and enhance public health outcomes.
- Healthcare facilities must be strengthened to deliver improved services to rural populations.
- The distribution of supplementary medicines such as Iron-Folic Acid, Vitamin A and Zinc tablets should be facilitated through schools, Anganwadi centers and Gram Panchayats.

CONCLUSION

The SDGs offer a valuable framework for improving health and nutrition, and Telangana's efforts to implement these goals through PRIs are commendable. The Healthy Village initiative is a promising approach to addressing maternal health challenges, particularly anemia. This study highlights the persistent issue of anemia among pregnant women in rural Telangana, emphasizing the need for improved counselling, better IFA compliance and context-specific interventions. PRIs have a crucial role to play in bridging health service gaps through localized

action. A coordinated, multi-sectoral approach engaging PRIs, health workers and community stakeholders is essential for achieving meaningful improvements in maternal health and fulfilling SDG commitments for a healthier Telangana.

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FROM GRASSROOTS ACTIVISM TO GLOBAL LEADERSHIP: EXPLORING COMPREHENSIVE STRATEGIES FOR WOMEN EMPOWERMENT AND GENDER EQUITY

Wajiha* and Mohd. Nafees Ahmad Ansari**

Abstract

This paper has sought to give detailed attention to discussing how localised women's movements build into expansive global frameworks and mechanisms that advance commonality in issues of gender equity-multidimensionality within economies, politics, and societies. Through the identification and analysis of the intersectional organising strategies operating across economic, political, and social axes, the work exposes how collective agency has acted to render women powerful agents of transformation. Mixed-methods research combines qualitative case studies with quantitative impact assessments across diverse geographical contexts. These key findings bring to light transformative pathways—from community-level interventions to international policy negotiations—while demonstrating how women's leadership reshapes developmental paradigms at their very core. Theoretical frameworks underpinning feminist postcolonial theories and capability approaches form a substantial basis for the analysis by unpacking complex relationships between individual empowerment and broader societal restructuring. It contributes to the necessary insights into practical strategies for dismantling gender-based barriers and constructing more inclusive and equitable global systems. The present research advances the understanding of women's empowerment as a dynamic, multifaceted process of social innovation and institutional transformation.

Keywords: Women's Empowerment, Gender Equity, Grassroots Activism, Global Leadership, Intersectionality

INTRODUCTION

Women's empowerment has been one of the most profound social transformations of the 21st century, disrupting lifelong systems of inequality and rethinking what

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human development could bring. Women's movements have articulated consistent tensions around collective agency for social change, from local community organising to international policy forums.

This paper traces the intricate pathways through which local activism becomes a world player and examines the intricate manoeuvrings through which women dismantle systemic obstacles and lay down more just systems of society.

Grassroots activism offers a key catalytic pathway from women's experiences to women-centred forms of transformative action. The famous cultural anthropologist Margaret Mead captured this phenomenon by saying, "Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has." This also reflects the growing power of grassroots movements for change, which have been crucial in the women's rights movement.

Throughout history, visionary individuals and small groups have pursued ideals such as religious freedom, political representation, and liberation from enslavement. Once considered radical, these ideals have become foundational principles of modern democratic societies. Activists worked tirelessly to shift public opinion and policy, making substantial contributions to the broader movement for gender equity.

Grassroots movements, at the base level, are the authentic voice from below, an articulation of the lived realities that the women themselves are providing about their situations of poverty, oppression, and inequity; therefore, a critical arena exists wherein the struggle against systemic inequity would result in the generation of home-grown solutions for highly complex social challenges. These movements are organic because they come out of

Communities build off personal narratives, shared experiences, and collective resilience. Grassroots activism creates spaces where women can develop critical consciousness, build strategic networks, and develop leadership capacities that exceed limited local contexts.

It has been a historical process of women's empowerment characterised by an interactive process between the resistance on the local levels and global advocacy. It begins with struggles for localised elimination of discrimination and marginalisation, which convert into refined, transnational movements that take on the edifice of power. These movements are not primarily about personal advancement but are a total overhaul of social, economic, and political systems.

What gives these movements their power is how they can transform individual struggles into collective action, turning personal experiences of marginalisation into sophisticated strategies of institutional transformation. Importantly, grassroots activism functions as a dynamic incubator of leadership in nurturing women's capacities to articulate complex social critiques, develop innovative problem-

solving approaches, and ultimately influence broader policy landscapes. This bottom-up approach ensures that the global leadership strategies are not some abstract theoretical constructs; they are deep-rooted in the lived experiences, genuinely representative and more responsive, and sustainable for women's diverse experiences across social, cultural, and economic contexts.

It is a contradictory progress that defines the current state of gender equity. While notable progress has been made in areas like economic involvement, political representation, and education, there are still enduring obstacles. There are still structural obstacles that prevent women from reaching their full potential, such as job discrimination and cultural norms that restrict women's autonomy and mobility. The current study reveals these complexities to comprehensively understand tactics that successfully convert grassroots efforts into long-lasting, revolutionary social change.

The intersectional frameworks that consider women's experiences to be multi-dimensional informed the study. One cannot think of gender in a vacuum; instead, it has to be viewed through the complex lenses of race, class, ethnicity, and geographical context. This holistic approach adopted in the research transcends the simplistic narratives of empowerment, with deep explorations into women's sophisticated mechanisms of negotiating, resisting, and reshaping power dynamics.

The methodology will combine different approaches: in-depth qualitative case studies and detailed quantitative analysis. The variation in contexts to be explored, from community-based initiatives in the Global South to policy interventions in developed economies, promises a holistic look at the different strategies for women's empowerment. This would, therefore, enable a critical examination of the achievements and limitations of the current approaches toward gender equity.

WOMEN'S EMPOWERMENT AND GENDER EQUITY

The linked but distinct conceptual frames of women's empowerment and gender equity have been open to critical scholarship multi-dimensionally. Theoretically, the essence of women's empowerment pertains to individual and collective agency in the capacity of women to make strategic life choices and challenge oppressive power structures. According to Naila Kabeer, one of the leading feminist scholars, empowerment is "the process by which those who have been denied the ability to make strategic life choices acquire such an ability." Here, a personal transformation is focused on wherein women should be capable of navigating and reshaping the social, economic, and political environments.

On the other hand, gender equity relates to a system approach whereby structural inequalities are to be rectified to provide just treatment, opportunities, and resource distribution between genders. The United Nations Development

Programme (UNDP) conceptualises gender equity as “the process of being fair to women and men, recognising their diverse needs, interests, and contributions, and redistributing power more equitably in society.” While empowerment has a more individual agency and personal transformation focus, the focus of gender equity is more on institutional and societal mechanisms that work their way towards equal opportunities.

In the Indian context, women’s empowerment emerges as a complex, multidimensional process that navigates intricate social, cultural, and institutional landscapes. Economic empowerment represents a critical dimension where women’s participation in the workforce and entrepreneurship challenges traditional patriarchal structures. The Self-Help Group (SHG) movement, particularly in states like Kerala and Tamil Nadu, exemplifies how financial inclusion can transform women’s economic agency, enabling access to credit, savings, and sustainable livelihood opportunities. Social empowerment manifests through challenging deeply entrenched social norms, with grassroots movements addressing issues like child marriage, dowry systems, and gender-based violence. Landmark legislative Interventions such as the Protection of Women from Domestic Violence Act (2005) and progressive policies supporting women’s education have been instrumental in this transformation. Political empowerment has seen significant progress through constitutional provisions like the 73rd and 74th amendments, mandating 33% reservation for women in local governance (Panchayati Raj institutions), creating unprecedented opportunities for women’s political participation. Personal empowerment emerges as a nuanced process of individual agency, where women challenge internalised oppression, develop critical consciousness, and redefine personal narratives. Educational initiatives, increased digital literacy, and changing urban social dynamics have accelerated this personal transformation.

Case studies from diverse regions, from urban tech centres like Bangalore to rural communities in Maharashtra, demonstrate how women strategically negotiate complex power structures, leveraging education, economic opportunities, and collective solidarity to expand their capabilities. The intersectionality of these empowerment dimensions reveals that progress is not linear but a dynamic, context-specific process of continuous negotiation and resistance against systemic barriers. Despite significant achievements, challenges persist, highlighting the ongoing need for comprehensive, integrated approaches to women’s empowerment that recognise the unique cultural, regional, and individual complexities of Indian society.

The interrelationship between women’s empowerment and gender equity is a nonlinear, multi-dimensional social transformation process that structurally reorganises society’s potential and the structures underpinning it. Symbiotic at their core, these relationships catalyse progress within one dimension by

leveraging gains in another to create a rich social change ecosystem. Women's empowerment is not about individual accomplishment alone but involves breaking down systemic obstacles and reconstructing the institutional frameworks that have systematically disadvantaged women. The study conducted by the World Bank in 2012 demonstrated that a 0.5% rise in annual economic growth was evident for countries that were investing in women's education and economic participation, thus showing the profound macroeconomic implications of gender equity. These show how economic, political, social, and educational domains interlink.

Economic empowerment is, for example, directly related to improving gender equity. According to one study by UN Women, when women are given equal economic opportunities, they reinvest about 90% of their income back into their families. Compared with men, communities reinvest about 30-40% into their families and communities. This serves, therefore, as a multiplier of money: better health, education and community development suddenly become possible. Not least on this list is political representation, an equally compelling story to tell. Countries with higher female parliamentary representation, such as Rwanda, which boasts over 60% of women in parliament, have more comprehensive social welfare policies and increased investment in education and healthcare.

In this case, educational equity is a core mechanism that reinforces broader empowerment. According to the UNESCO 2020 report, every additional year of education for women increases earning potential by 10-20% and reduces intergenerational cycles of poverty.

Educated women are more likely to make informed reproductive health choices, delay marriage, and have fewer, healthier children, thus breaking generational cycles of marginalisation. Equally significant has been the social and cultural change. These anthropological studies illustrate that the empirical realities of women's empowerment directly challenge highly embedded patriarchal norms and reshape community understandings of what it means for men and women to engage in gender performances. Community-based approaches, such as in rural parts of India, have shown that female self-help groups offer not only economic opportunities but also contest traditional structures of power within the household and the overall community, with the growing potential influence of women.

Other emerging frontiers of this interconnectedness are technological advancement and digital inclusion. The GSMA Mobile Gender Gap Report 2021 stipulates that improved digital access for women enhances economic opportunities, educational access, and social mobility. For example, in Sub-Saharan Africa, mobile technologies have enabled women entrepreneurs to access financial services, market information, and educational resources previously out of their reach.

Intersectionality provides a critical lens to these complex dynamics. Women's experiences regarding empowerment are not homogeneous but deeply influenced by race, class, ethnicity, and geographic location. The scholarly work of Kimberlé Crenshaw and subsequent researchers has underlined that any effective gender equity strategy must consider such multifaceted identities. This is explicitly acknowledged in the global development agenda, especially in the UN Sustainable Development Goals. Goal 5, on gender equality, acknowledges that women's empowerment is not an end but a vital underpinning for holistic social development. Dismantling systemic barriers, creating equal opportunities, and challenging discriminatory practices all allow societies to tap into hitherto unexploited potential for development that is both inclusive and sustainable.

THE POWER OF GRASSROOTS ACTIVISM

Grassroots movements in India have been pivotal in driving transformative social change, serving as powerful catalysts for women's rights and gender equality. Deeply rooted in local contexts, these movements have consistently challenged patriarchal structures by mobilising women across diverse social, economic, and cultural landscapes. The Chipko Movement in Uttarakhand, initially an environmental conservation effort, exemplifies how women's collective action can transcend traditional boundaries, empowering rural women to challenge ecological and gender-based injustices.

Organisations like the Self-Employed Women's Association (SEWA), founded by Ela Bhatt, have revolutionised economic empowerment by organising women workers in the informal sector, providing critical support through unionisation, financial services, and skill development. The landmark Gulabi Gang in Uttar Pradesh represents another powerful grassroots initiative, where women dressed in pink saris actively combat gender-based violence, challenging social norms through direct intervention and community mobilisation. Legal advocacy movements, such as those surrounding the Vishaka Guidelines (addressing workplace sexual harassment) and campaigns against dowry and child marriage, demonstrate how localised resistance can translate into national policy reforms.

Grassroots initiatives have historically demonstrated remarkable power in driving social change, from the Civil Rights Movement in the United States to the anti-apartheid struggle in South Africa. These bottom-up movements illustrate the profound potential of collective action when ordinary citizens mobilise around shared values and goals. The Civil Rights Movement, led by activists like Martin Luther King Jr. and Rosa Parks, exemplifies how grassroots efforts can challenge systemic injustices through peaceful protest, community organising, and strategic nonviolent resistance. Recently, movements like Black Lives Matter and the global

climate strikes led by youth activists such as Greta Thunberg have showcased the ability of grassroots networks to rapidly spread awareness, challenge institutional norms, and demand policy changes.

While these initiatives possess significant strengths, including direct community engagement, flexibility, and the ability to amplify marginalised voices, they also face notable limitations. Grassroots movements often struggle with sustainable funding, maintaining cohesive leadership, scaling their impact beyond local contexts, and navigating complex political landscapes. The Arab Spring, for instance, demonstrated both the transformative potential and inherent challenges of grassroots activism, where initial momentum for democratic change was met with significant institutional resistance. Despite these challenges, grassroots initiatives continue to be crucial mechanisms for social transformation, leveraging collective passion, local knowledge, and innovative strategies to address systemic challenges from the ground up.

These movements are characterised by their intersectional approach, recognising that complex interactions of gender, caste, class, and regional identities shape women's struggles. Digital platforms and social media have further amplified grassroots efforts, enabling broader networking, knowledge sharing, and collective mobilisation across geographic and social boundaries. By creating spaces of solidarity, building collective consciousness, and developing leadership skills, these movements have challenged systemic inequities and fundamentally reimagined women's potential for social transformation in India.

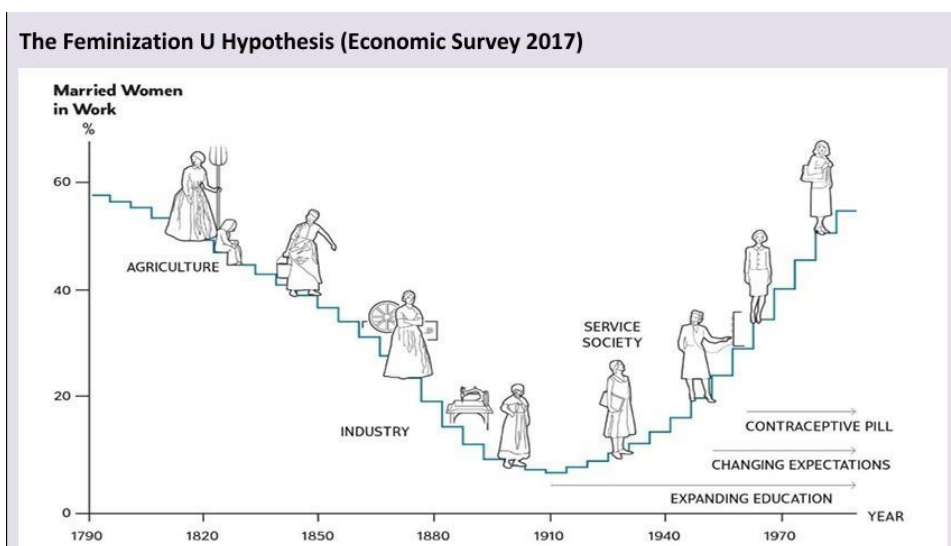
STRATEGIES FOR WOMEN'S EMPOWERMENT

Women's empowerment at the grassroots level requires a multifaceted, context-sensitive approach that recognises the unique challenges women face across different social and economic landscapes. In rural developing countries, strategies often focus on economic independence through microfinance initiatives, skills training programs, and cooperative farming networks that provide women with financial resources and collective support. These approaches generate income and challenge traditional gender hierarchies by demonstrating women's economic capability. Urban contexts may emphasise legal literacy programs, professional mentorship networks, and advocacy for workplace equality, targeting systemic barriers that restrict women's professional advancement.

Education emerges as a critical cornerstone of empowerment, with grassroots initiatives developing targeted literacy programs, vocational training, and digital skills workshops that equip women with knowledge and capabilities to negotiate social and economic spaces more effectively. Awareness-raising campaigns play a crucial role in transforming deeply entrenched cultural narratives about gender

roles, utilising community theatre, local media, and peer-to-peer education to challenge patriarchal norms and promote women's rights. In regions with significant cultural resistance, successful strategies often involve engaging male community leaders and male allies to support gender equity, recognising that sustainable change requires holistic community transformation.

By combining economic empowerment, educational access, cultural dialogue, and strategic advocacy, grassroots initiatives can create nuanced, locally responsive approaches to women's empowerment that respect cultural contexts while steadily expanding women's agency and opportunities. One important idea is clarified by the **Economic Survey of India (2017)**: the “**Feminization U Hypothesis**.” The 2023 Nobel laureate Claudia Goldin proposes a U- shaped correlation between female labour force participation (LFPR) and economic progress.



The Feminization U Hypothesis provides a useful framework for comprehending the dynamics of female labour force participation in India. But it's important to recognise that reality is more complicated and that this is a simplified model. Although the idea might account for the initial drop in LFPR in India's statistics, more research is necessary to fully understand the ongoing standstill and decline in recent years.

A strong care economy is essential to achieving India's "Viksit Bharat" goal by 2047. Investing in care services, developing new business prospects in the care industry, and advancing gender-inclusive policies are imperative to realise this vision.

BUILDING BRIDGES: CONNECTING GRASSROOTS ACTIVISM TO GLOBAL LEADERSHIP

The dynamic interplay between grassroots movements and global leadership initiatives has become increasingly complex and interconnected in recent years, revealing a nuanced mechanism of bottom-up social transformation. Contemporary examples like the worldwide climate movement demonstrate how localised activism can effectively escalate to international policy discussions, as seen with youth-led climate strikes influencing the Paris Agreement and compelling national governments to adopt more aggressive carbon reduction targets.

The need for partnerships between organisations from diverse sectors has grown, enabling the pooling of resources, skills, and expertise to tackle pressing global issues effectively. Such collaborations have successfully addressed various challenges, from eradicating diseases like malaria through the Roll Back Malaria Partnership to boosting Africa's agricultural sector with the Alliance for a Green Revolution in Africa. The 17th Sustainable Development. The goal underscores the importance of these partnerships and emphasises the necessity of multistakeholder partnerships to achieve significant progress.

International Women's Day 2024 theme, "Inspire Inclusion," exemplifies how collaborative efforts among businesses, governments, academia, and communities can foster gender equity. By understanding and addressing the intersectionality of identities, organisations can better appreciate diverse perspectives, creating environments where all individuals feel valued and included. This approach enhances initiatives directed at achieving gender equality.

Organisations such as Amnesty International and Human Rights Watch have increasingly recognised the critical role of grassroots networks, developing collaborative frameworks that amplify local voices in global policy forums. The #MeToo movement provides a compelling illustration of how a grassroots initiative can rapidly transform from a social media hashtag to a worldwide reckoning with systemic gender-based violence, ultimately prompting legislative reforms and institutional accountability mechanisms across multiple countries. International NGOs have evolved from traditional top-down approaches to more collaborative models, creating platforms that directly integrate grassroots leaders into decision-making processes, recognising that sustainable change requires genuine community participation.

The United Nations, for instance, has increasingly incorporated grassroots representatives in climate conferences and human rights discussions, acknowledging local perspectives. Offer a nuanced understanding of complex social challenges. However, this relationship is not without tensions, as grassroots movements often challenge established institutional structures, creating a productive but

sometimes fraught dialogue between activism and formal governance. By bridging local experiences with global platforms, these interactions demonstrate the transformative potential of collective action in addressing contemporary global challenges.

Under India's G20 Presidency, reaffirming their dedication to achieving gender equality and empowering women and girls globally. The meeting emphasised the need for transformative actions to accelerate progress on the Sustainable Development Goals (SDGs), addressing systemic barriers and advancing women's roles as decision-makers and change agents.

Adopting the "G20 Action Plan on Sustainable Development through Gender Equality and Empowerment of Women" was pivotal. They also stressed the need for gender mainstreaming across G20 initiatives and policies, particularly in education, entrepreneurship, climate action, and digital skilling. This collaborative approach seeks to create equitable opportunities and ensure sustainable development for all women and girls by 2030.

CHALLENGES AND OPPORTUNITIES

Despite significant progress, several challenges and setbacks remain in achieving gender equality in women's empowerment worldwide. Limitations of women in some leadership positions are one primary obstacle. To date, just 27% of all parliamentary seats, 36% of all local government seats, and 28% of management positions worldwide are held by women due to their limited participation in various perspectives in policy decision-making and holistic policymaking. India ranks 143 in the list of countries in the 'Monthly Ranking of Women in National Parliaments' published by the Inter-Parliamentary Union, a global organisation for national parliaments.

Then again, there is also economic disparity. Most women all over the world still suffer from poverty and a lack of economic opportunities, which have hampered their capacities for financial independence and improvement of their general quality of life. Besides, gendered biases in various spheres of life, such as business, education, and health, further discriminate against and hamper the development of women. To confront and alter prejudicial beliefs and presumptions, researchers have emphasised the necessity of greater gender diversity and inclusion. The ongoing fight for women's rights has been further highlighted by the reversal of progressive legislation, such as the US Supreme Court's decision to overturn *Roe v. Wade*. This growth has raised awareness of the feminist movement's more significant concerns, such as promoting economic prosperity and gender equality in all nations. Global efforts to close the gender gap, including research projects, mentorship programs,

pay equality laws, and awareness campaigns, are crucial, but progress is still being made slowly.

According to the World Economic Forum Global Gender Index Report 2024, “Full gender parity in an economic setting is achieved none among an assessed economy out of a sample size comprising 146.” Its complete closure can likely take several years – from approximately the next one hundred to some thirty or more than so – 130–134 years to be somewhat exact, again. This suggests that although progress has been made, there is still a long, challenging road ahead to achieve complete gender equality.

Rwanda has made impressive strides in women’s political representation, currently possessing the most significant proportion of female lawmakers worldwide (more than 60%). This success is primarily attributed to their unique quota system – the “zipper method.”

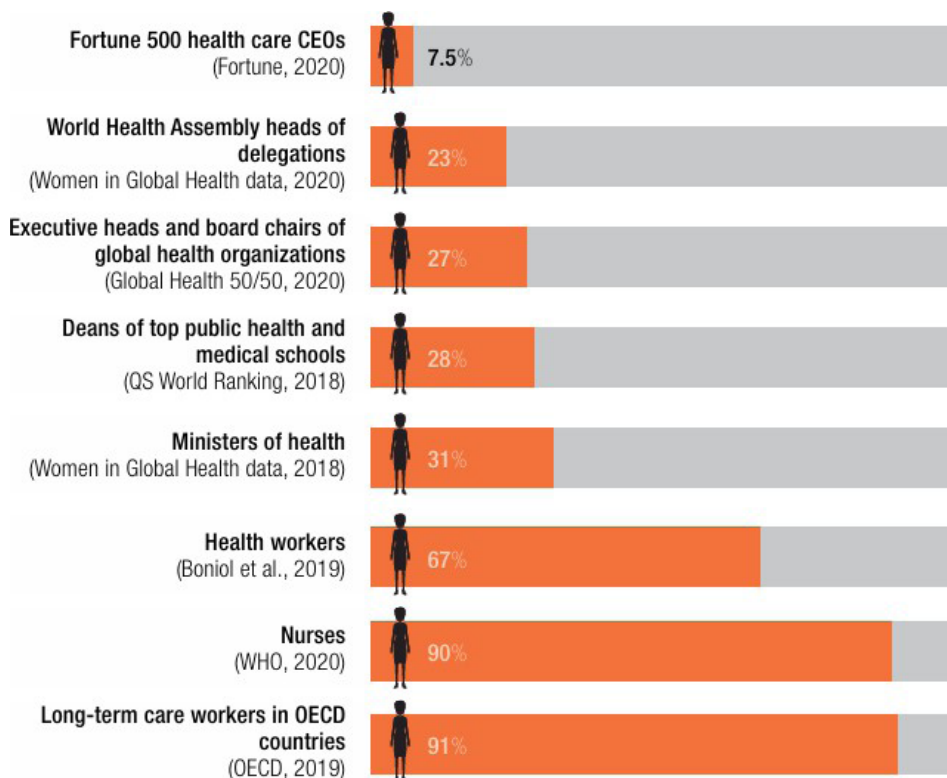
Political parties must alternate male and female candidates on their electoral lists, guaranteeing at least 30% female participation.

Regular evaluations, including the thorough examination of the 2030 Agenda for Sustainable Development conducted by heads of state and government in 2019, have highlighted the significant steps that remain and the advancements that have been made. Based on studies such as “Progress on the Sustainable Development Goals: The Gender Snapshot,” these reviews draw attention to the crucial areas that need focus and coordinated action to remove current obstacles to gender equity. Only around 25% of top leadership roles are held by women, although making up over 70% of the workforce in the health and social care sectors worldwide. This gap in leadership roles highlights the underrepresentation of women in decision-making positions, which may adversely affect health systems worldwide.

One important tactic for attaining gender equality and enhancing sexual and reproductive health and rights is using gender transformational techniques. These strategies seek to transfer power, money, and services while challenging damaging gender norms.

One important tactic for attaining gender equality and enhancing sexual and reproductive health and rights is using gender transformational techniques. These strategies seek to transfer power, money, and services while challenging damaging gender norms. As an essential part of its Strategic Plan 2022-2025, the United Nations Population Fund (UNFPA) highlights the significance of gender transformational initiatives. The WHO Policy Action Paper “Closing the Leadership Gap: gender equity and Leadership in the Global Health and Care Workforce” examines essential policy measures to address gender biases and enhance outcomes for women in the workforce. This Report also stated that despite making up about 70% of the worldwide health and social workforce, women are thought to occupy

only 25% of senior positions. Less than 5% of the CEOs of Fortune 500 healthcare corporations are female, and just 23% of national delegations to the World Health Assembly in 2020 were led by women.



Women's representation in Global Health

CONCLUSION

A complete paradigm shift in addressing gender equity is represented by the path from grassroots agitation to global leadership in women's empowerment, necessitating coordination – efforts across many societal levels. The effectiveness of integrated approaches is demonstrated by recent successful efforts like UN Women's "HeForShe" campaign, which engages male allies in fighting gender stereotypes and boosting women's leadership, effectively bridging local activism with global campaigning.

Effective techniques frequently incorporate economic empowerment at the grassroots level. One example is the Self-Employed Women's Association (SEWA) in India, which has developed from a local cooperative to a globally renowned model for women's economic empowerment. Future action recommendations should

concentrate on developing mentorship networks that link rural and urban women leaders, bolstering digital literacy initiatives to increase women's involvement in the expanding digital economy, and establishing long-term funding sources for grassroots organisations led by women.

Bolivia took a strong step in 2009 to lower the gender gap. Bolivia passed legislation requiring women to participate equally in all elected entities. With the help of this law and quotas for native women, the percentage of women in parliament increased dramatically from 13% to 50% in just ten years. Financial impediments to entrance were addressed by the statute, which also required state sponsorship for female candidates. As seen by African mobile banking platforms that have transformed women's access to financial services, technology is crucial in scaling up grassroots efforts.

Moreover, incorporating gender-responsive budgeting at all governmental levels, from national to local municipalities, guarantees that policy decisions consistently consider women's needs. Global leaders and grassroots movements must continue to work together for these projects to succeed, with multinational organisations giving local voices a voice in international policy debates. Addressing new issues like the gender gap in technology and the disproportionate effects of climate change on women needs this kind of collaboration. By continuing this cooperative strategy and developing local leadership simultaneously, the gender equality movement can bring about long-lasting, revolutionary change that is felt everywhere, from local communities to international fora.

In addition to being morally required, sustained women's empowerment is strategically necessary for the inclusive and sustainable growth of the world. By investing in women's empowerment, the nation can reach its full potential and create a wealthier, egalitarian, and gender-neutral society for all its residents. India's social, economic, and political progress dramatically depends on the multidimensional and continuous—sustainable women's empowerment process. Through several legislation, programs, and initiatives, India has advanced women's rights and gender equality. However, obstacles still exist, and coordinated action is required to guarantee that women in all spheres of society have an equal chance to prosper and contribute significantly to India's development.

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GOVERNING SLUM TRANSFORMATION THROUGH LOCAL IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT GOAL 11.1 IN NORTHEAST INDIA

Bitupan Doley* and Jayanta Krishna Sarmah**

Abstract

Inclusive and integrated urban development is crucial for ensuring the rights of slum dwellers within a city, where neoliberal urban infrastructure projects often pose threats by undermining basic amenities like housing and water. This study tries to understand this contradiction in Northeast India by choosing the largest city, Guwahati for extensive fieldwork. This study reveals some interesting insights into governing slum transformation, which illustrates, among others, how urban marginal space becomes a place of exclusion, insecurity, and inequality. Based on field study and relating it to SDG 11.1, it argues that a fundamental reorientation of urban policy at the local level is necessary for transforming marginal spaces into an inclusive and integrated city.

Keywords: SDG, slum, marginal, exclusion, Guwahati

INTRODUCTION

The rapid expansion of cities has created significant challenges, including poverty, inequality, and the growth of slums (UN-Habitat, 2006:5). Currently, approximately 55 percent of the world's population lives in urban areas, and this figure is projected to rise to 70 per cent by 2050, which will lead to the growth of big cities in Asian and African countries, particularly India, China, and Nigeria (UNSD, 2023: 34). As cities expand, slums have proliferated. Currently, 1.1 billion people reside in slums, and projections indicate that another 2 billion will do so within the next 30 years (UN SDGs, 2015). The slums are facing several challenges, such as housing, water

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supply, sanitation, etc (Buhaug & Urdal, 2013: 1-2). To mitigate and address these challenges, the United Nations (UN) adopted SDG 11, which calls for 'sustainable cities and communities' and aims to "make cities and human settlements inclusive, safe, resilient, and sustainable". To be sustainable, cities should seek social and environmental equity. In this context, SDG 11.1 is very significant, which specifically focuses on ensuring access for all to adequate, safe, and affordable housing, as well as basic services, while also upgrading slums.

Guwahati is the largest metropolitan city in Northeast India, situated between the southern banks of the mighty Brahmaputra River and the foothills of the Shillong plateau (Borbora and Das, 2014: 61). People living in slums or informal settlements often lack access to basic human rights, including housing, health, water, and participation. Despite the government of India has launched several schemes to the upliftment of urban poor including slums such as Pradhan Mantri Awas Yojana-Urban (PMAY-U), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Basic Services for the Urban Poor (BSUP), a notable section of slums remains outside the grasp of the state due to policy exclusion, the insecurity of tenure, and lack of documentation. If the government's urban development policy focuses on the city's core while neglecting the slums, implementing SDG 11.1 effectively becomes a critical challenge. This neglect hinders the creation of more inclusive, participatory, and urban sustainability. This study examines the issue of slum transformation and access to housing and basic services within the broader context of the challenge of implementing SDG 11.1. This study aims to critically examine the significant policy shortcomings in the local implementation of SDG 11.1. This study examines slum transformation through six indicators: structural quality of the housing and permanency of the structure, security of tenure, access to water, access to sanitation and solid waste, drainage & sewerage facility and is motivated by one research question: how do slum dwellers fall behind state policy?

THEORETICAL FRAMEWORK

UN-Habitat (2010) defines a slum as the ultimate expression of urban poverty's physical and spatial features and intra-city inequality (Smit et al., 2017: 108). Finch (2023: 492) concluded that the origins of the slums are "a trans-class social and spatial concept". This study employs a critical urban theory framework to exploring the dynamics of slum governance and exclusionary mechanisms embedded in the implementation of SDG 11.1 in Guwahati. Like other countries, the Government of India adopted neoliberal economic policies in the 1990s. It has restructured many cities, and these urban projects have been carried out with the help of international donor agencies (Ghosh, 2020: 286). Literature such as Ghertner (2015:1) highlights the mass demolition of slums in Delhi to make the status of a world-class city. Similarly, Baviskar (2020: 19) alludes to the concept of 'bourgeois or elite

environmentalism' in the context of the demolition of 48,000 slum houses alongside the railway tracks where issues of the marginalized and the poor are excluded from environmental discussions. Regarding Mumbai, Sharma (2010:69) contends that the Mumbai urban transport project and Mahadevia and Narayanan (2008: 549) state that the 'Shanghaing Mumbai agenda' is a prime example of evictions of slums for urban restructuring initiatives. Maringanti (2012: 53) highlights that approximately 4400 people lost their livelihoods due to the Sabarmati riverfront development project. These neoliberal restructuring projects are central to David Harvey's core concept of accumulating resources by dispossession. Devis (2006: 14) criticizes the neoliberal anti-urban policies and how these policies fail to create a global city and the proliferation of slums, especially in Asia, Africa, and Latin America. Harvey (2008: 1), in his article 'The Right to the City', challenges the negative picture of slums and advocates for participation of slums in the restructuring or reshaping of the city. Security of tenure provides a guarantee to the residents for the right to continuous habitation without arbitrary eviction. According to Payne (2000: 416), land tenure is the set of relationships or the mode by which land is held or owned. He advocates for a continuum of tenure security from pavement dwellers to freehold owners rather than thinking of tenure as legal or illegal. In his tenure continuum diagram, he considers only *de jure* rights, but at the same time, he acknowledges the importance of *de facto* rights in deciding tenure security (Desai and Mahadevia, 2013: 8-9).

MATERIALS AND METHODS

The current study is exploratory research and employed a qualitative-dominant case study approach with some quantitative insights to explore study the governance mechanism of slum transformation in Guwahati city. A case study approach is employed to examine the governance mechanism, institutional practices and slum experiences that shape the implementation of SDG 11.1 in relation to slum transformation in Guwahati.

The data collection methods consist of both primary and secondary data. According to GMDA (2009), there are 26 slums in Guwahati. Primary data were collected through field work conducted in six slum settlements: Pandu, Manipuri Basti, Bimala Nagar, Gauhati University Harijan colony, Islampur Hedyatpur Harijan Basti, and Uzanbazar. First, the author visited Gauhati University Harijan colony because of known contacts and acquaintances. These acquaintances eased the researcher's access to the slums for conducting the research by helping negotiate access to the slums. Following conversations with participants in the initial slum community at Gauhati University Harijan Colony, the authors received further details about other slums, directions to additional Guwahati slums, and contact information from the participants. Thus, we applied snowball sampling until the

data saturation point was achieved. As a result, A total of 120 slum households was interviewed until the data saturation point. In addition, several qualitative methods viz. observation (participatory and non-participatory) were adopted during fieldwork. Secondary data was obtained through a study of government records, policy documents, reports, and academic literature. Combining these data sources enabled a comprehensive triangulated approach toward the analysis of SDG 11.1 implementation in the field of slum governance functioning in Guwahati.

SLUM FORMATION AND URBAN INEQUALITY IN GUWAHATI

Though Assam has experienced the lowest level of urbanisation of any Indian state, Guwahati city's population has been increasing. The city population grew from 584,342 in 2001 to 968,549 in 2011. By 2024, it is expected to have exceeded 1.3 million. The rapid population explosion has placed enormous pressured on urban commons and infrastructure and it contributes outstandingly to the expansion of slum or informal settlement across Guwahati city. Desai and Mahadevia (2013: 21) narrate how they were brought from Bihar, Madras, Andhra Pradesh, etc., to work sanitation and cleaning where they were provided them with small geographical areas without adequate amenities. These small geographical areas were known as 'Harijan Basti or colonies.' Over time, these places turned into slums or informal settlements. In addition, dwellers mostly from low-income strata, unskilled and landless came to the city in search of better livelihood. After arriving in the city, due to the expensive cost of housing, they typically stay in cheap accommodations, i.e., squatter settlements, identified as slum settlements (Borgohain, 2021:487). These settlements lack a better living environment, characterized by poor housing conditions, inadequate sewage systems, lack of sanitation, and overcrowding (Deka, 2017: 286). Several surveys have been conducted by formal institutions such as GMC to assess the prevalence of slums. The GMC carried out three slum surveys in the city in the years 2006, 2009, and 2012. There has been a significant change in the number of slum settlements due to the changing definitions of slums, which has affected their number. In 2006, GMC considered slum settlements as per the 2001 census definitions, where a settlement with 60-70 households had poorly congested housing, inadequate infrastructure, and poor sanitary and drinking water facilities. In 2009, the GMC considered a pocket with 25-30 households with poor housing and lacking basic services as a slum. However, by 2012, this definition was revised, with a settlement of 10-15 households without basic amenities being considered a slum (Desai et al., 2014: 22). The definition of slums tends to vary across regions, geographical locations, and organisations, reflecting relatively divergent social, economic, and political interpretations.

The Draft Master Plan Report for Guwahati Planning Area – (2025-2045) mentions that a total of 217 slums distributed over various wards of GMC.

Approximately 9% of all households live in slums. Of these, 15,701 families are officially notified, representing about 40% of total slum households, while over 60% remain unnotified. Presently, there are 118 non-notified and 99 notified slums. According to the 2011 Census, there are 139,296 persons residing in slums inside the GMC and OG areas, constituting nearly 12% of the population.

FIELD STUDY AND RESULTS

The field study was conducted in April-June 2024 and April 2025 across six slum settlements in Guwahati. The author collected relevant data from respondents using six indicators and sub-indicators. The results of the field study are discussed based on these six indicators, organised thematically.

Table 1: Indicator and sub-indicators

<i>Indicator</i>	<i>Sub-Indicators</i>
Structural quality of the housing and permanency of the structure	(i) Durable housing (ii) Sufficient living space
Security of tenure	(i) Security of tenure (ii) Chance of evictions
Access to water	(i) Access to an improved water source
Access to Sanitation	(i) Safely managed sanitation services
Solid waste, Drainage & Sewerage Facility	(i) access to drainage connectivity (ii) waste disposal system.

Structural quality of the housing and permanency of the structure:

The aspects of the structural quality of the housing of slums and the permanency of the structure are studied by two key indicators: durable housing and sufficient living space. Durable housing is examined by three sub-indicators: types of houses, location of the houses, and material used to construct the homes. It is found that more than 60 per cent of households in slums live in a kutchra and hut made of tin. Only a few people can build pucca and semi-pucca houses. It indicates that only a few households have the financial capability to construct better housing and highlight the deep socio-economic inequality that exists in Guwahati. Respondents stated that they had built their houses independently without government support. The field study reveals that slum locations (66.67 per cent of households) are near to hazardous locations, such as near flood plains, railway lines, and landslide areas. They are confined to living in hazardous locations due to the unaffordability of housing and land tenure insecurity. The house material is studied by roof, floor, and wall material. Regarding roof durability, 95 per cent of households have a tin roof, and conditions are not long-lasting. Regarding wall durability, 80 per cent of

houses are made of tin, and these walls are not in good condition. Regarding floor context, 70 per cent of households have mud floors, and only 10 per cent have brick floors. Low-quality housing materials (tin roofs, mud floors and tin walls) reveal how slum dwellers are socio-economically marginalized. The prevalence of tin walls and mud floors reinforces the question of long-term durability and vulnerability to bad weather like storms, rains, and floods.

Furthermore, sufficient living space is studied by households using two sub-indicators (the number of rooms and the household per room). UN-Habitat (2018) stated that a sufficient living area is defined as having no more than three people sharing a single room. Field study shows that 62.67 per cent of households live in one room with their family and 68 per cent share one room with 4–8 people. In this aspect, the family's caretaker faces difficulty in meeting the family's basic needs, which leads to nutritional deficiency in children.



Figure 1: Displays the housing condition.

Source: Authors field visit

Security of Tenure

Only 9.33 per cent of households have the security of tenure. The security of tenure indicator for housing can refer to ownership of land, buildings, or both (Vitriana, 2022: 7). It is studied using two indicators: households with the security of tenure and households with the chance of eviction. First, households with the security of tenure are studied by ownership of the land, house and both, rental house, occupying government lands, etc. About 80 per cent of households do not have land, home, or both. Mostly, they live in either rental houses or occupy government lands (60 per cent). Similarly, households occupying government land often face the possibility of eviction. Of these occupying governments lands, 33.33 per cent have been evicted from their houses. Desai et al. (2014) elucidates the state-led

evictions of the poor in the city, particularly from railway lands, reserve forest and wetlands.

Access to water, Sanitation and Solid waste, Drainage & Sewerage Facility

Access to water is studied by sustainable access to an improved water source. Two sub-indicators are identified, such as drinking water sources and the location of drinking water sources. The major drinking water sources are water tankers, municipal suppliers, and others. Field study reveals approximately 40 per cent of slum households have access to tap connections. When asked about tap connectivity, the respondent said *“tap connectivity has been provided, but it is not yet operational”*. However, water is supplied to certain slums through water tanks provided by Non-Governmental Organisations (NGOs). Therefore, they have to pay money for drinking water. However, most sources of drinking water are of poor quality and unclear. About 13.34 per cent of slum households have used tubed wells or boreholes as drinking water sources. Regarding the location of drinking water, 60 percent of households have used improved drinking water sources within their in-house premises. In contrast, only 40 per cent of households rely on drinking water sources outside their premises.

Access to sanitation is measured by the population using safely managed sanitation services. The empirical data shows that 88 percent of households have access to toilet facilities. Regarding the question on whether the government had provided toilets and the respondents said they *had not provided them; they had constructed them independently*.



Figure 2: Displays the drainage basin of slums

Source: Authors field visit.

An additional primary concern is that slum dwellers cope with dysfunctional drainage. Drainage basins are usually filled with high volumes of solid waste and wastewater. Dysfunctional solid and sewage treatment plans are also significant issues in Guwahati. There is a clear visibility of the city's poor maintenance and inadequate infrastructure in the drainage and sewerage system. Two indicators study solid waste, drainage & sewerage facilities: access to drainage connectivity and a waste disposal system. Among the households living in slums, about 73.33 per cent have connected to the drainage system for wastewater disposal.

DISCUSSION

Starting with the six indicators stated in SDG 11.1 and their corresponding SDG targets, the discussion part examines the process of slum transformation in Guwahati. This section critically looks at the governance practices, contested urban rights and unequal distribution of resources.

While SDG 11.1 emphasises inclusive, safe, and affordable housing, field study and observation reveal significant variations in insecurity of tenure, exclusion in Guwahati. There has been a significant variation in the structural quality of housing and the permanency of the structure across the slum settlements. Field study reveals that several slums, such as Bimala Nagar, Islampur Hedayatpur Basti, and Pandu, have households living in kutcha and hut structures made of tin, tarpaulin, bamboo, and wood. More than 60 per cent of households live in kutcha houses made of tin across Guwahati. Only a few people can build pucca and semi-pucca. It raises questions about resilience during monsoon floods and urban disasters. The structural quality of housing demonstrates urban poverty, governance disparities, and socio-economic inequalities. It reflects Galtung's (1969) argument of structural violence in which structure prevents people from meeting their basic needs and deprives them due to unequal power distribution, negligence, and unfair policy decisions. Galtung (1969) argues that structural violence is silent, invisible, and According to the right to the city, every citizen should have the right to reside in safe, secure, and sustainable living environments. However, the reality of these living conditions undermines the core of this concept. Such poor housing conditions negatively affect women, children, and older members. It was tried to know, *Does poor housing negatively affect your health and family?* The respondent told the author, "Yes, but we do not have land patta and belong to a low-income family. Our health is being adjusted to these environments over the years we have lived here." Women face extreme heat exhaustion and dehydration while cooking the meals for the family. Especially these conditions have direct negative impacts on the health of pregnant women, which leads to emotional, physical, and reproductive health risks. There is a high chance of infection in newborn babies due to their living environment. Several studies highlight critical issues related to maternal

health in the slums of Guwahati. For instance, Kalita and Dey (2014) emphasize the ongoing challenges faced by mothers in these areas. Additionally, Zaman and Dutta (2024) conducted an empirical study that underscores the struggles urban slums encounter in fulfilling their children's nutritional needs. The high cost of the health sector poses a serious threat to them, especially the deadliest. In this context, Lefebvre's concept of 'the right to city' is significant wherein people can live with all the basic rights with dignity (Lefebvre, 1996: 158).

During the interview, the respondents highlighted minimal institutional support for the construction of the house. Most of them constructed their house by themselves without any government aid. However, under JNNURM sub-mission for BSUP, three sites were identified for building housing for the urban poor in Guwahati: Fatasil, Morasoli, and Amingaon (Desai et al., 2014: 24). However, these dwelling units have been allotted to the GMC class IV workers who have been living in slums or informal settlements. However, the urban poor, who work as street vendors, daily wage workers, and construction workers, have not benefited from housing. Despite the government having constructed rental housing for the urban poor, most of them cannot avail themselves of the benefits due to the high rents of the houses. It has widened the differences between different classes existing in slums. According to Harvey, house building is the ultimate production of capital accumulation (Arefin & Rashid, 2018: 153). However, PMAY-U was launched for slum redevelopment through the involvement of private agencies and credit-linked subsidies. The participation of the private sector in in-situ slum development has brought out the question of affordability and exacerbated the exclusion of the urban poor. This is precisely what David Harvey (2008) calls "accumulation by dispossession," where the state withdraws public housing and forces the urban poor to leave the peripheries, allowing land to be used for large-scale capitalist infrastructural projects. Although, they have been living here for a long time, lack of proper land documents like Miyadi Patta undermines not only the right to reside but also their basic rights, including housing, health and safety, necessary for engagement in development, or inside the state. Field study data revealed that most households are unable to claim benefits under schemes like PMAY-U due to discrepancies in their documents. The requirement for official tenure as a criterion for claiming housing not only contradicts housing for all as mentioned in SDG 11.1, but also institutionalises selective citizenship, where few households are entitled to housing and basic rights. In Guwahati, the exclusion of households from PMAY-U benefits reflects what Roy (2005) defined as "state production of informality" and manifestation of Holston's (2008) differentiated citizenship, where slum households are differentiated based on entitlement citizens and partial citizens. Roy (2005) conceptualises informality as a mode of urbanisation where the state produced itself through selective regulation and exclusion. In this Context, the government can

adopt a rights-based intermediate approach, as Payne (2000) argues, to make slum households eligible for PMAY-U and facilitate municipal participation through the issuance of occupancy permits. It will enhance security tenure for households and protect against evictions.

Fieldwork highlights that slum houses are built haphazardly, and their locality, known as 'Mohalla', is where they have assembled and formed a social relationship between members within the same socio-economic contexts (Borgohain, 2023). Most dwelling units are constructed with tin roofs and materials like bamboo and wood. Most units have only one room and do not have windows or ventilation. Interestingly, households have converted one room into a kitchen. The conditions are vulnerable, and bad weather, such as storms and rain, might affect them. Most of them live in rented houses within slums due to the unaffordability of rent in non-slum areas.

In Guwahati, it is alleged that the governments act more as a neoliberal agent rather than employing private agencies in the gentrification of slums. For railway lands, there is no such policy provision for *miyadi patta*¹. The residents of slums, along with railway tracks and lands often face evictions. For instance, 80 (Eighty) families of Bamunimaidam were evicted in 2012 by the railways (Kalita, 2012). Women face the worst experience during eviction. In this context, "violence against women is not myth, it is truth" (Islam & Dey, 2013: 134). The impact of eviction is horrific, dehumanizing, and brutal, which makes them unjust, oppressive, and helpless. Various literature supported these claims. For instance, according to the UN Special Rapporteur on the Right to Housing, women experiencing evictions are at unequal, coercive and severe risk of sexual, physical, and emotional violence (Paglione, 2006). While talking to respondents who have not been evicted, they also expressed fear of being evicted. The authors asked: *Is there any chance of eviction?* They replied that *we have been paying taxes despite lacking 'Miyadipatta' land, that the government will not evict us here.*

The lack of an Aadhaar card, Voter Card present serious challenges to accessing basic rights and amenities. It hampers student enrolment in education and scholarships, opening bank accounts, and accessing ration cards, which ease their lives through basic food supplies. Most residents do not have voting rights in Guwahati. Although some residents have voting rights, they do not have Aadhaar cards. Thus, they are not only deprived of access to housing and basic services, including water and sanitation but are also undermined their claims of right to the city and justification for evictions (Bhan, 2009). They are called "second-rate citizens, incomplete citizens, pseudo citizens or mutilated citizens" (Nuijten, 2013:11). In this context, the concept of "Insurgent Citizenship" is significant, where poor people of the city are aware of their citizenship rights and claim participation

1. Miyadipatta denotes the official document of permanent land ownership or settlement..

in the city's political system (Holston, 2008: 245). At the same time, empirical field study reveals the divergence of theoretical assumptions of slums. Many people often take a passive role in the government rather than making overt right-based political claims. They do not discuss and talk about their rights in the city and expect from the government. However, government services, including housing, sanitation, and electricity, are bonuses or gifts rather than entitlements (Nuijten, 2013:12). This circumstance indicates a broad internalization of marginality where the fear of evictions normalizes the culture of political silence and reflects patron-client relations instead of right-based engagements.

In Guwahati, water supply projects have been transferred to private agencies. Four major water supply projects, funded by the Government of India under JNNURM, Japan International Cooperation Agency (JICA), and the Asian Development Bank (ADB), have been established to provide affordable, safe, and continuous (24/7) water supply to the city (Water Supply Projects, n.d.). However, the water services have been given little attention in the slum. Water is supplied to certain slums through water tanks provided by Non-Governmental Organisations (NGOs). Therefore, they have to pay money for drinking water. Most households are deprived of the right to drinking water due to the monetization of water. Moreover, the privatization of the water sector in Guwahati fails to provide slums with affordable access to water. They depend on their neighbour to collect drinking water. Bayliss & Deekshit (2014: 1) elaborate that neoliberal water policies have failed to have a transformational impact on people. However, the government focuses predominantly on privatising water services to improve efficiency; in reality, it has been unable to provide water and has reflected inequalities in access to water. Privatizing of water services pushed poor people in the slums to disconnect their water due to high fees of payments (Walters, 2013: 11).

For the financial year 2022-23, the centre and state governments have released 2,90,000 lakhs under Swachh Bharat Mission-Urban (SBM-U) in Kamrup Metro (Government of Assam, 2023). *The field study highlights a significant gap between policy execution and on-ground reality. Despite the government releasing funds to improve sanitation facilities, the slums lack sanitation services due to poor implementation and a lack of proper inclusive urban planning. Although they built toilets themselves, it shifted the financial burden to these marginalized families who were dealing with low incomes and high living costs. Most self-constructed toilets lack proper doors, ventilation, and lighting, which creates safety concerns, especially for women and children. Adolescent girls and women face difficulty during the times of menstruation, leading to health issues.*

Field data indicates that a significant segment of the slum community relies on ineffective systems for wastewater disposal. For waste management, GMC has collaborated with NGOs to facilitate the primary waste collection from households

and commercial establishments. However, in slums, the NGO has collected solid waste from door to door where accessibility and location are well established. Most of the slums (especially the periphery) are often neglected. It creates an urban apathy where peripheral slums usually face urban bias. There is a lack of political commitment to integrate slums into city development rather than see slums as wasteland. Additionally, NGOs always try to minimise expenses like transportation and daily workers' wages. As a result, they often neglect the collection of waste materials from peripheral areas.

Following our discussion, the study has established how the slum transformation governance in Guwahati remains constrained owing to tenure insecurity, inefficient service provision, and exclusionary policies. Although the global commitment under SDG 11.1 to providing access to housing and basic services to all, Guwahati slum conditions show another reality with its persistent disjuncture between these global commitments and local level implementation. Slum dwellers are often labelled as encroachers and others, leaving them outside the purview of state-led urban development projects, further reinforcing urban inequality and contested citizenship. The lack of security of tenure and other official documents means that slum dwellers not only fall behind in housing schemes but also in obtaining basic rights, such as water, voting and others. While neoliberal urban infrastructure projects such as water, health, education, etc, aimed to improve living conditions, the slum dwellers often face exclusion and deprivation due to poverty, inequality, and other barriers. These findings remain consistent with critiques of market-driven urban policy across the globe and contribute to the larger global debate on SDG localisation, specifically around problems of ensuring SDG 11.1 in Guwahati city in the Global South. As argued by Satterthwaite (2016), the localisation of SDG is often underestimated due to a lack of local institutional commitments. Guwahati is illustrative of such cities where weak governance capacity and a limited pool of resources, competing with neoliberal urban priorities, tend to dilute or contradict international development agendas in practice. This case demonstrates that SDG localisation cannot be treated as a mere administrative exercise of tying municipal policies with global targets, but as a structural governance transformation that includes recognising slum dwellers as urban citizens, rights-based housing, and participatory planning.

CONCLUSION AND RECOMMENDATIONS

Transforming slums requires more than just upgrading the physical infrastructure; it also calls for maximising human potential and building inclusive, resilient cities. Housing and other basic amenities are the cornerstones of a decent standard of living. The problem of tenure security is of paramount importance for slum dwellers. It is not just a legal matter but a human rights and dignity matter. The

security of tenure has a positive relationship with improving housing and basic services. The study shows that slums with better security of tenure have higher numbers of pucca houses, while those with inadequate security tend to have fewer pucca houses. Overall, tenure security is a vital component in the transformation of slums.

Policymakers need to focus on poverty alleviation strategy. Poverty causes them to live in deteriorated environments. The government should not only be limited to providing beneficiary schemes to them but also a special focus on the skill development of people through which people can earn money by themselves. Of late, microfinance can play an essential role in women's empowerment and improving living conditions. Most of them work in the informal sector as well as corporate companies. Therefore, the corporate company should expand their social responsibility towards uplifting its employees in slums rather than focusing on profits. Lack of valid documents such as Aadhar cards, voter cards is a significant problem. Therefore, the government should take initiatives in this regard, and civil society organizations can also play a significant role in helping poor people. Enhancing education among children is a long-term commitment to upgrading slums. Education may create awareness among slum dwellers about the sustainability of their lives and acquire resilience strategies to mitigate their problems. Therefore, creating awareness about sustainable life is essential.

The government should adopt an integrated rights-based approach or collective governance by engaging the government, civil society organizations, the private sector and local slum associations. Local community-led initiatives can be successful in terms of sanitation, waste management, and drainage, but they need government and private sector support. The government should include slum communities in the decision-making of all projects and resources of the slum. Private sectors should not prioritize only profit but instead focus on efficient and effective slum upgradations. In addition, the field study highlights that affordable housing is a serious issue in the city. It needs to implement affordable housing policies and rent control schemes in Guwahati.

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READING INEQUALITIES AND CULTURAL CAPITAL: RETHINKING EDUCATIONAL JUSTICE FOR A SUSTAINABLE FUTURE

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Abstract

Education system in India is influenced by colonial legacies, transmission of intergenerational privilege perpetuates social stratification. Researcher tried to investigate the Cultural Capital influence on students achievement, particularly on Reading Ability of the secondary school students using Pierrie Bourdieu's theory. On the basis of comprehensive literature review the researcher gathered insight to conduct a quantitative research. The data from four districts of west-Bengal through stratified random sampling was collected from 501 secondary school students. Tools employed were: (i) Silent Reading Ability Test (SRAT) (ii) self-developed scale of cultural capital (SCC). Data analysis was done using Regression Analysis. Findings underscore the importance of integrating culturally inclusive approaches while designing curricula and pedagogical strategies. School should recognize and accommodate varying level of cultural resources that students bring to school. This research aligns with goals of sustainable development SDG 4 (Quality Education) by promoting inclusive learning opportunities for all and SDG 10 (Reduced Inequalities) by addressing disparities in access to Cultural Capital by contributing empirical evidence to inform inclusive educational policy and promote educational equity.

Keywords: Cultural Capital, Educational Inequality, Intergenerational, Reading Achievement, Sustainable Development Goal.

INTRODUCTION

In India, even after independence, educational reforms have been unable to completely eliminate disparities among students that are deeply embedded within social and cultural hierarchies shaped by the colonial past. However, changes

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brought by these reforms couldn't remove differential access to knowledge and achievement (Chopra, 2019; Kumar, 2021). In 1986, the concept of Cultural Capital introduced by Pierre Bourdieu, a French sociologist. According to Bourdieu & Passeron (1990) Cultural Capital is a non-financial asset like cultural knowledge, educational credentials, and dominant cultural norms and values. Cultural Capital of three forms is delineated as follows:

- (i) Embodied Cultural Capital comprises cultural knowledge, behavioural dispositions, and language proficiency. Language proficiency is a cultural asset for students who come from a familiar environment, performing better in a classroom than those who were denied such an opportunity (Annalmalai, 2005). According to Kumar (2014) confidence, style of learning, and living are behavioural dispositions.
- (ii) Objectified Cultural Capital possessed in the form of books, computers, smartphones, internet access, etc. These resources are provided by the parents for educational support to enhance knowledge (Pal, 2010). According to Aggarwal (2020), access to digital education leads to the digital divide. Those who possess cultural artifacts enhance the academic achievement of the students.
- (iii) Institutionalised Cultural Capital usually associated with parents' educational qualifications and the type of school. Kingdon (2007) found that private school provides an environment for better learning.

READING AS A CULTURAL CAPITAL

Reading is no longer considered only a technical skill, but rather a socially embedded practice. Students who come from a family where abundant reading materials and are exposed to literary activities facilitate the development of strong reading comprehension and fluency. Conversely, those who are denied access to these resources face challenges to come up to the expectations at school. Socio-economic background, parental education, and linguistic environment amplify the differential access to these forms of cultural capital. These factors critically shape students' reading ability is a foundational skill that accentuates academic performance across disciplines and is influenced by these factors. Recent research suggests that students' better reading fluency and comprehension is due to higher Cultural Capital in the form of a richer home literacy environment and cultural codes familiar to school. A strong correlation was seen between Cultural Capital and academic performances in previous researches. According to Joshi (2017) students are in advantageous situation whose parents possess high Cultural Capital is transmitted which help them to perform better than their peers. Home language environment influences proficiency in instructional language which influences the rural as well as urban students' academic achievement (Jha, 2020).

LITERATURE REVIEW

According to Dumais (2015) cultural resources, like skills, habits, and dispositions transmitted to children by parents, influences their educational outcomes and perpetuates social inequality. Mikus et al. (2020) conversion of Cultural Capital into educational achievement emphasized both symbol and skill. Investment in cultural resources by parent's is transmitted, absorbed, and utilised paving the way for educational success for their children. (Jaeger and Breen, 2020). Cultural Capital gives an advantage to Children to replicate their parents' social class and status (Dumais, 2015; Farkas, 2018). Breinholt and Jaeger (2020) argued that Cultural Capital fosters skills that enhance educational success rather than serving as signals.

Language proficiency is a pivotal form of Cultural Capital (Ramanathan, 2008). Those students who get the opportunity to speak English in a home environment outperform in the classroom (Annamalai, 2005). Students who possessed high Cultural Capital performed better in reading, irrespective of socio-economic disparities (Jheng et al., n.d.). Public policy cultivates cultural capital significantly empowers Dalit and Adivasi students, enhancing their educational, economic, social, and political mobility, which is crucial for their overall development and integration into society (Bhoi & Lakra, 2024). In ethnic minorities, educational achievements and academic outcomes are influenced by the reading behaviour of parents and their resources (Driessen, 2001). Bihari (2013) found that the educational attainment of children is significantly influenced by the components of cultural capital, specifically interest, activity, and information, suggesting that these factors play a crucial role in determining school success. It was found that private schools are more effective in instilling values in school-going children compared to other types of schools. The students from better social and economic backgrounds perform better. Parents income, educational credentials, and engagement, like shared book reading, foster early literacy skills and improve school readiness. Children's literacy, language and reading process are significantly associated with their home environment (Malhi et al., 2017). Karki & Karki (2025) found that within the school environment, students who possess greater Cultural Capital develop proficiency easily, unlike others who have to face challenges belonging to low socio-economic backgrounds. Students performed better when provided a culturally relevant reading comprehension passage than a passage based on a foreign culture (Jamal et al., 2024).

Family cultural capital, specifically institutionalised and objectified have positive influence on the academic performance of students of middle school (Jin et al., 2024). According to Fan (2023) the students from higher socio-economic backgrounds possess higher cultural capital, which results in better reading skills and more achievement. Thus, Bourdieu's theory perpetuates educational

inequalities. First-generation students often lacked strong role models for reading, with many unable to recall their early reading experiences. This absence of support and investment in early reading development was linked to the Cultural Capital of their families, which was often weak, particularly in lower socioeconomic backgrounds (Brown et al., 2016).

Numerous studies have been conducted so far on Cultural Capital and educational achievement showed a strong link between them. Parental cultural background enhances reading skills conversely, those who belong to constrained households fall behind their peers, creating disparity. Although pivotal role played by Cultural Capital in enhancing reading, few studies have been conducted in India. This study aims to fill this gap by quantitatively exploring the influence of cultural resources on the reading ability of students of secondary school in the region of West Bengal.

NEED FOR THE STUDY

This study will offer meaningful insights into understanding cultural resources, their importance in developing skills (reading) in children that enhance educational outcomes. This can inform educational policies and educators on the development of targeted interventions and strategies to address inequalities. It can bridge the achievement gap to promote educational equity, and enhance the reading ability of students from diverse cultural backgrounds.

Statement of the Problem

The present study intends to understand Reading Inequalities and Cultural Capital: Rethinking Educational Justice for a Sustainable Future.

Operational Definition

Cultural Capital: is non-financial cultural resources. Here it means Embodied, Objectified and Institutionalized cultural resources.

Reading Ability: here refers to the achievement in reading comprehension skills stated by Yang-Heim, G.Y. (2023) in silent reading ability test (SRAT).

Secondary Education: here refers to educational institution offering students schooling of class IX and X.

Secondary School Students: here refers to students studying in class IX and X government aided schools.

Sustainable Development Goal (SDG4) is quality education. Here, it means equitable quality education measured through access to cultural resources.

OBJECTIVE

To study the Impact of Cultural Capital on the Reading Ability of secondary school students.

HYPOTHESES

H₀: There is no significant Impact of Cultural Capital on the Reading Ability of secondary school students.

DELIMITATION OF THE STUDY

Data was collected from four districts of West-Bengal (government-aided secondary schools).

METHODOLOGY

Design: Descriptive survey method and analysis using quantitative techniques.

Population: The population consisted of students enrolled in government-aided secondary institutions across four districts in West-Bengal.

Sample: the sample of 501 secondary school students of government-aided institution was selected through stratified random sampling technique.

Tools: Data was collected using the following tools:

- (i) Cultural Capital Scale (CCS) developed by Researcher and Supervisor
- (ii) Silent Reading Ability Test (SRAT) developed by Researcher and Supervisor

Data collection: the scale (Cultural Capital Scale for Secondary School Students) consisted of thirty items designed to measure both objectified and embodied cultural capital). In this study, Institutionalized Cultural Capital have been considered as an institutionalized judgement made about the students on the level of their performance in English according to (Bourdieu & passeron 1990, as cited in Yang-Heim, G.Y, 2023).The researcher opted to employ a five-point Likert-type rating scale, which includes the response categories of never, rarely, sometimes, mostly, and always.

For the evaluation of silent reading, Silent Reading Ability Test (SRAT) was developed for ninth graders having multiple-choice Question to measure the reading comprehension skills stated by Yang-Heim, G.Y. (2023) are retrieving directly stated information, Interpreting explicit information, Interpreting by making Inferences and Reflecting on Text. In order to evaluate their reading ability, a passage was chosen from the English textbook endorsed by the West Bengal Board of Secondary Education, which had been thoroughly reviewed in the classroom. An unfamiliar passage was extracted from the esteemed literary work Wise and

Otherwise authored by Sudha Murty. To assess the oral reading proficiency, the methodology proposed by Yang-Heim, G.Y. (2023, ch-4.2.1.2) was implemented. thus, Reading Ability comprised of Silent Reading Ability test and Oral Reading (fluency). The methodology emphasized the importance of evaluating both Silent and Oral Reading fluency, which are critical components in assessing overall Reading Ability in students.

Result: The statistical techniques were used to evaluate the data collected, focusing on Impact of Cultural Capital on the Reading Ability of the participants. The researcher employed Excel and SPSS version 22 for the analysis of data.

Score Transformation: the scales of measurement used were Cultural Capital and Reading Ability (Silent Reading Ability test and Oral Reading). They are likely to have different units and as we know that the scales of measurement must be comparable. The scores on these scale make different sets of distribution. Thus, these distributions are converted into a common distribution in order to make a common or comparable scale for making relative comparison. The raw scores were converted into some common or standard scores. In this process firstly, the scores were changed into z-score but these standard scores have certain limitations. To overcome such limitations T-scores are used by using the formula ($T = 10z + 50$).

CULTURAL CAPITAL

Table 1: Descriptive Statistics of Cultural Capital

Scale	N	Mean	St. Deviation	Std. Error Mean	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
Cultural Capital (T-Score)	501	48.328	6.861	0.306	-0.123	0.109	-0.293	0.218

The above table (table 1) shows that, the mean score of Cultural Capital (N = 501) is 48.3283 and SD is 6.86128. The minimum T-score started from 29.68 and reached to 66.32(maximum). The Median of the distribution is 48.6048. Skewness is 0.123 which is close to 0 and distribution can be called as nearly symmetric. The Kurtosis value 0.293 which depicts that the distribution is approximately normal(mesokurtic).

Table 2: Categorization of Cultural Capital of Secondary School Students (Level-wise).

	Level of Cultural Capital(T-Score)			Total
	Low (< = 40.00)	Medium (40.01-60.00)	High (60.01+)	
Count	96	336	39	501
%	19.2%	73.1%	7.8%	100.0%

The classification of students' Cultural Capital levels was done based on T-scores by using the **Mean $\pm$ 1 Standard Deviation (SD)** method. This approach categorized the whole group of individuals into three categories namely Low, Medium, and High. The low Cultural Capital group belongs to have T-scores ≤ 40.00 , medium has T-scores between 40.01 and 60.00 and high has T-scores ≥ 60.01 . It is observed that the percentage of students with Low Cultural Capital is 19.2%, students with Medium Cultural Capital are 73.1%, and students with High Cultural Capital are 7.8%.

The analysis indicates that most of the students are under medium Cultural Capital level, which may influence their reading performance and overall academic outcomes.

READING ABILITY

Table 3: Descriptive Statistics of Reading Ability

Scale	N	Mean	St. Devia- tion	Std. Error Mean	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis
Reading Ability (T-Score)	501	48.0585	7.67204	0.34276	-0.197	0.109	-0.516	0.218

The above table(3) shows Reading Ability mean score of students (N = 501) is 48.0585 and SD is 7.67204 . The minimum T-score started from 28.22 and reached to 68.88 (maximum). Skewness is 0.197 which is **slightly left-skewed**: which is close to 0 and distribution can be called as nearly symmetric. The kurtosis value 0.516, a **negative kurtosis** indicates a **platykurtic** distribution which depicts that the distribution is approximately normal.

Table 4: Categorization of Cultural Capital of Secondary School Students (Level-wise).

Low (≤ 41.87)	Level of Reading Ability (T-Score)			Total
	Medium (41.88 - 58.13)	High (58.14+)		
Count	111	345	45	501
%	22.2%	68.9%	9.0%	100.0%

The classification of students' Reading Ability levels was done based on T-scores by using the **Mean $\pm$ 1 Standard Deviation (SD)** method. This approach categorized whole group of individuals into three categories namely low, medium and high. The low Reading Ability group belongs to have T-scores ≤ 41.87 , medium has T-scores between 41.88-58.13 and high has T-scores ≥ 58.14 . In secondary

school students, 22.2%, of students with low Reading Ability, 68.9% students with medium Reading Ability, and 9.0% students with high Reading Ability.

HYPOTHESES TESTING

Objective : To study the Impact of Cultural Capital on secondary school students Reading Ability.

H₀: There is no significant Impact of Cultural Capital on secondary school students Reading Ability.

Table 5: Regression Model Summary

<i>Model Summary</i>					
<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Std. Error of the Estimate</i>	<i>Durbin-Watson</i>
1	0.439	0.193	0.191	6.90077	0.284
a. Predictors: (Constant), CULTURAL CAPITAL (T-Score).					
b. Dependent Variable: READING ABILITY (T-Score)					

Table 6: Linear Regression ANOVA

<i>ANOVA</i>						
<i>Model</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
1	Regression	5667.372	1	5667.372	119.011	.000
	Residual	23762.697	499	47.621		
	Total	29430.069	500			
b. Dependent Variable: READING ABILITY (T-Score)						
c. Predictors: (Constant), CULTURAL CAPITAL (T-Score).						

Table 7: Regression Coefficient

Coefficients						
Model B		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		Std. Error	Beta			
1	(Constant)	24.345	2.196		11.088	0.000
	Cultural Capital (T-Score)	0.491	0.045	0.439	10.909	0.000
Dependent Variable: READING ABILITY (T-Score)						

These plots (Histogram & Scatter plot, Normal P-P plot) shows that residuals are normally distributed.

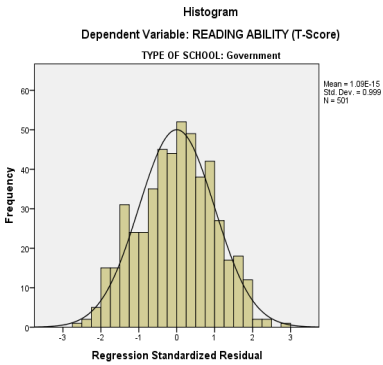


Fig. (a)

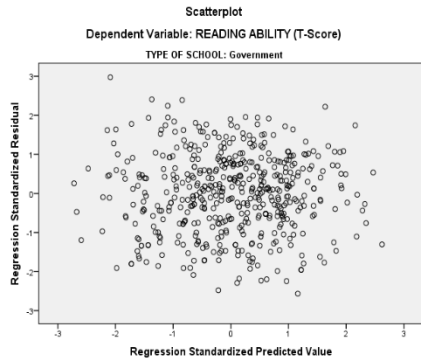


Fig.(b)

Fig. a & b: Histogram & Scatter plot Reading Ability of secondary school students for regression equation.

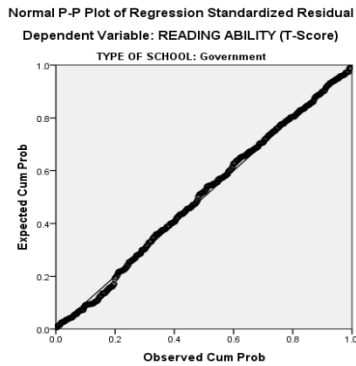


Fig. (c)

Fig. (c): Normal P-P plot _Reading Ability of secondary school students for regression equation

INTERPRETATION

In the Regression Summary Model, in the Table (5), R-square is found to be 0.193 which shows that the model (Cultural Capital) explains only 19.3% of variance of Reading Ability of the students. For the test of statistical significance of the result, the regression ANOVA summaries are presented in Table (6). The analysis of the result of regression for the prediction of Reading Ability from the scores of the Cultural Capital is found to be significant, $F(1,499) = 119.011$, $p < 0.05$. The contribution each factor is presented in Table (7) and this model can be used for prediction of Reading Ability.

According to the statistics provided in table (7), it is observed there is no problem of collinearity as the Tolerance and the VIP were found to range much above 0.01 and much below 10 respectively.

The Table (7) identified Cultural Capital impact on dependent variable (Reading Ability). As the column of unstandardized coefficients are measured with t scores only, Table (7) indicates, the independent variable, Cultural Capital (CC) ($B = 0.491$, $t = 10.909$, $p < 0.05$) was found to make positively significant impact on the dependent variable Reading Ability.

Regression Equation

As of linear regression, the coefficient in Table (7) provides the essential values for the prediction equation.

$$y = a + bx$$

$$y = 24.345 + 0.491 * \text{Cultural Capital (T-score)}$$

where y = Reading Ability (dependent variable)

a = the constant, here, 24.345

b = the slope for regression coefficient

x = Cultural Capital (independent variable)

FINDINGS AND DISCUSSION

Varying levels of Cultural Capital was found among the students and they were categorised accordingly. 39 (7.8%) students were found to possess high level of cultural capital, 336 (73.1%) medium, and 96 (19.2%) showed low scores. Similarly, differential level of reading ability was found among the students. students with high level of reading ability score were 9% (45) students, medium level reading ability were 68.9% (345), and 22.2% (111) students with low level reading ability scores.

Findings of Inferential statistics on Cultural Capital and reading ability highlights the importance of cultural resources in educational outcomes. Based on Regression analysis, $F(1,499) = 119.011$, $p < 0.05$ explored that cultural resources have significant impact. Increase in Cultural Capital can enhance the reading ability of the students. Targeted intervention and strategies can improve students' performance and bridge the achievement gap. English language learning is influenced by Cultural Capital (Karki & Karki, 2025; Nash et al., 2024). Cultural Capital influence reading ability as evidenced by numerous previous studies (Bihari, 2013; Fan, 2023; Wang & Wu, 2023). Socio-economic background of parents causes unequal distribution of Cultural Capital which cause inequality (Jaeger&karlson,

2018). Students from better socio-economic background and social class are better in educational achievement. family Cultural Capital and mothers educational level influence overall academic performance (Jin et al., 2024;Assulaimani & Althubaiti, 2021). Cultural Capital of parents is transmitted to their children and their ability to convert Cultural Capital into educational success(Jaeger, 2009; Mikus et al., 2020). The study highlights the urgent need for education system to better recognise and value the diverse cultural assets students bring with them. When curricula focus mainly on dominant cultural norms, they risk reinforcing existing inequalities. To address this, policies should encourage culturally responsive teaching practices to strengthen cultural resources for students from disadvantaged backgrounds. Achieving the aims of the sustainable development goals-SDG4, which promotes inclusive and equitable quality education depends on undertaking these disparities in Cultural Capital to advance fairness and social justice (UN, 2015).

RECOMMENDATIONS

1. Parents Cultural Capital influences their children educational achievement so policies should focus on enhancing parents access to cultural resources.
2. Need for expanding family literacy programs, community-based reading projects, and access to educational materials that facilitate the transmission of resources to children and improvement of educational outcomes.
3. 'Lock-step' curriculum model where everyone is expected to adapt a prescribed set of standards fails to accommodate students from diverse cultural background (Brimi, 2005). Schools should consider the varying levels of cultural resources possession by the students when designing curricula.
4. Future research can explore the significance of these effects in different educational context and barriers that limit the accumulation of Cultural Capital among marginalised groups.

CONCLUSION

Cultural Capital fosters skills (Breinholt & Jaeger, 2020). Students outperformed when supplied culturally relevant reading material than those who read unfamiliar text (Jamal et al., 2024). Students understand text better based in their local culture develop reading (Nambiar et al., 2020). Lack of collaboration, technical knowledge and qualified teachers impact the effectiveness of Cultural Capital. teachers need to know their students difficulties to integrate suitable strategies (Abidin & Mohamad, 2019). Lack of strong role models for reading, support and investment in early reading development was linked to Cultural Capital of family low socio-economic background and social class difference influence academic performance (Farkas, 2018). Higher caste and affluent household tend to have

better educational opportunities (Kamal, 2024). Disparities in parental Cultural Capital can restrict children access so resources need to be allocated effectively to promote equitable educational output. Successful schools can be taken as role model to improve students learning. Education system needs to embrace the varied cultural experiences that students contribute, ensuring that every learner has equal access to success. This will further the sustainable development goals of inclusion, equality, and lifelong learning.

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PUBLIC-PRIVATE PARTNERSHIPS FOR ADVANCING SDG TARGETS: SOME CASE STUDIES OF DEVELOPING COUNTRIES

Md Afroz*

Abstract

Public-Private Partnerships (PPPs) have emerged as an essential instrument for promoting the Sustainable Development Goals (SDGs) in developing nations. These collaborations are perceived as a method to bridge the finance gap, improve efficiency, and tackle intricate developmental issues. This research examines the utilisation of Public-Private Partnerships (PPPs) to achieve Sustainable Development Goals (SDGs) in developing countries, emphasising case studies across several sectors like infrastructure, healthcare, education, and clean energy. The paper assesses the advantages and disadvantages of PPP models, referencing successful instances such as India's National Highways Development Project, renewable energy initiatives in Morocco, and health collaborations in Kenya. The analysis of these situations identifies critical aspects that contribute to success, such as governmental commitment, legal frameworks, and the active participation of local people. Moreover, it emphasises the significance of openness, accountability, and risk-sharing in guaranteeing that public-private partnerships effectively contribute to sustainable development goals. The research also examines the obstacles encountered by PPPs in developing nations, including corruption, insufficient local capability, and the necessity for sustained policy coherence.

Keywords: Public-Private Partnerships, Sustainable Development Goals, Developing Countries, Infrastructure, Healthcare, Renewable Energy.

INTRODUCTION

Public-Private Partnerships (PPPs) have arisen as a pivotal strategy for advancing developmental results in poor nations, especially for achieving the UN Sustainable

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Development Goals (SDGs). These collaborations merge the efficacy and ingenuity of the commercial sector with the social accountability and regulatory authority of the governmental sector. In the last ten years, the significance of Public-Private Partnerships (PPPs) has escalated as governments confront fiscal limitations and intricate developmental requirements that public institutions cannot fulfil independently. Public-Private Partnerships (PPPs) offer an effective means to harness private investment and managerial proficiency to provide vital services and infrastructure, particularly in areas where public delivery systems are inadequate or overwhelmed. Public-private partnerships (PPPs) facilitate the aggregation of financial resources, technical expertise, and implementation capabilities, thereby addressing institutional constraints and expediting advancement towards the Sustainable Development Goals (Bhattacharya et al., 2012). Moreover, these collaborations stimulate innovation in service provision, generate employment possibilities, and implement performance-based accountability frameworks that improve overall results. Their versatility across several areas, such as health, education, infrastructure, and clean energy, renders them a multifaceted instrument for sustainable development (George, et al., 2016). The chapter analyses the efficient use of PPPs to promote SDG targets in developing countries, with case studies from India, Morocco, and Kenya. These examples demonstrate the promise and limitations of incorporating private sector skills into public development objectives, providing essential insights for readers policymakers, and practicing partners dedicated to fostering inclusive and resilient growth.

THEORETICAL FRAMEWORK: PPPS AND THE SDGS

Public-Private Partnerships and the Sustainable Development Goals are interlinked. Public-Private Partnerships (PPPs) are organised collaborative agreements between governmental authorities and private sector organisations, intended for the financing, planning, execution, and management of projects and services typically delivered by the public sector. In these arrangements, both parties distribute obligations, risks, and advantages, fostering a synergistic environment where public interest and private efficiency converge. The theoretical basis of PPPs is predicated on the notion that the private sector, with its access to sophisticated technology, operational proficiency, and innovative methodologies, can substantially improve the quality and accessibility of public services when appropriately included into development initiatives. The Sustainable Development Goals (SDGs), are adopted by all UN Members States in 2015 within the framework of the 2030 Agenda for Sustainable Development, consist of 17 goals and 169 targets that function as a plan for global peace and prosperity. These objectives are inherently interrelated and aim to harmonise the economic, social, and environmental facets of development. Realising the SDGs necessitates

the mobilisation of extensive financial and technical resources, the cultivation of multi-stakeholder partnerships, and the establishment of efficient governance across all tiers. Public-private partnerships (PPPs) are specifically acknowledged in Sustainable Development Goal 17 (Partnerships for the Goals), which underscores the significance of collaboration among governments, the private sector, and civil society. In addition to Goal 17, public-private partnerships (PPPs) are essential for the attainment of the other Sustainable Development Goals (SDGs). Such as PPPs partnerships in the health sector to advance Sustainable Development Goal 3 (Good Health and Well-being) by improving healthcare infrastructure, diagnostics, and service delivery via collaborative investments. Also, Public-private partnerships (PPPs) in education enhance Sustainable Development Goal 4 (Quality Education) through the advancement of school infrastructure, digital learning platforms, and educator training. Likewise, public-private partnerships in water and sanitation contribute to the attainment of Sustainable Development Goal 6 (Clean Water and Sanitation), and initiatives in renewable energy and energy access pertain to Sustainable Development Goal 7 (Affordable and Clean Energy). Infrastructure-centric public-private partnerships (PPPs) directly advance Sustainable Development Goal 9 (Industry, Innovation, and Infrastructure) by constructing roads, bridges, and smart cities that enhance economic growth and connectivity (United Nations, 2015).

CASE STUDIES

Infrastructure Development in India

National Highways Development Project (NHDP): The National Highways Development Project (NHDP), overseen by the National Highways Authority of India (NHAI), is a premier project showcasing the effective execution of public-private partnerships (PPPs) in extensive infrastructure development. Initiated in the late 1990s, the NHDP sought to enhance, restore, and extend the nation's extensive and frequently neglected highway infrastructure, essential for promoting trade, mobility, and economic development. This program encompassed multiple phases aimed at enhancing important roads, including the Golden Quadrilateral and the North-South and East-West corridors, therefore markedly strengthening national connectivity (Singh, 2018).

The execution of PPPs within the NHDP predominantly depended on two novel financial frameworks; one- the Build-Operate-Transfer (BOT) model and two- the Hybrid Annuity Model (HAM). The BOT concept incentivised private developers to fund, build, and manage roadways for a designated concession duration, recouping investments via toll revenues. This not only reduced the financial strain on the

government but also enhanced efficiency, ensured timely delivery, and implemented performance-based maintenance. The HAM, a combination of EPC (Engineering, Procurement, and Construction) and BOT models, was subsequently established to enhance private sector involvement by mitigating financial risks. Under the Hybrid Annuity Model (HAM), the government finances 40% of the project cost during construction, while the private company provides the remaining 60% and receives annuities over time (Goswami, 2010).

The NHDP has significantly influenced the alignment with SDG 9 (Industry, Innovation, and Infrastructure). Improved roadway infrastructure has decreased trip duration, increased safety, and diminished transportation expenses. It has improved market access for rural producers, enhanced the mobility of commodities and individuals, and promoted regional economic integration. Furthermore, it has created job possibilities during both the construction and operational phases, while also invigorating related industries such as logistics and manufacturing. The project's success has established India as a paradigm for other developing nations aiming to enhance infrastructure via public-private partnerships, demonstrating how purposeful collaborations may revolutionise national transport networks and significantly advance overarching development objectives (UNDP).

URBAN INFRASTRUCTURE: SMART CITIES MISSION AND METRO PROJECTS

The Smart Cities Mission (SCM) of India, initiated in 2015, seeks to foster sustainable and inclusive urban development through the utilisation of technology, public involvement, and private sector engagement. This project prominently features the incorporation of Public-Private Partnerships (PPPs) in essential service sectors, including sanitation, transportation, water supply, solid waste management, and digital infrastructure. In cities such as Pune, Bhopal, and Ahmedabad, Public-Private Partnerships (PPPs) have facilitated the implementation of Intelligent Transport Systems (ITS), electric bus fleets, smart parking solutions, and comprehensive Wi-Fi networks. (PIB. GoI).

The Pune Smart City Development Corporation Ltd. (PSCDCL) collaborated with commercial enterprises to deploy intelligent street lighting and surveillance technologies, thereby improving urban safety and efficiency. Ahmedabad, within the SCM framework, participated in public-private partnerships to digitise public services and advance e-governance. A significant achievement is the establishment of an Integrated Command and Control Centre (ICCC) overseen by a coalition of public and private entities (KPMG India, 2020). These centres have been essential during situations like the COVID-19 pandemic by enabling real-time monitoring, contact tracking, and service provision. Metro rail projects are exemplary success

stories of public-private partnerships in urban transportation. The Delhi Metro Rail Corporation (DMRC), established in phases with financial and technical assistance from private engineering and consultancy firms, has emerged as a paradigm for urban mass transit. The Bengaluru Metro (Namma Metro) similarly employed a hybrid Public-Private Partnership strategy that incorporated public financing and private execution for construction and rolling stock acquisition. The Hyderabad Metro, constructed under a concession deal with Larsen & Toubro, ranks among the largest public-private partnership metro projects globally (Business Today, 25 March 2025). These efforts advance SDG 11 (Sustainable Cities and Communities) by alleviating transportation congestion, decreasing emissions, and enhancing urban connectedness.

Renewable Energy in India: Gujarat Solar Park

India's shift to renewable energy has garnered international acclaim, especially due to its ambitious solar energy initiatives. The Gujarat Solar Park, particularly the Charanka Solar Park, illustrates the structuring of public-private partnerships to promote Sustainable Development Goal 7 (Affordable and Clean Energy) while facilitating economic growth. Situated in the arid Patan area, Charanka Solar Park was established by the Gujarat Power Corporation Limited (GPCL) in partnership with private entrepreneurs and international investors (ANI, 21 Sep. 2024). The state government supplied land, essential infrastructure, and transmission facilities through a plug-and-play concept, thereby substantially lowering entry hurdles for private enterprises. Developers including Tata Power, Adani Power, and GMR established long-term Power Purchase Agreements (PPAs) with state distribution corporations, therefore securing commercial viability and project bankability. The Solar Energy Corporation of India (SECI) and the International Finance Corporation (IFC) backed the program by providing financial instruments and advising services. In addition to energy generation, the project generated employment possibilities for the local populace, particularly in panel installation, maintenance, and related services. The success of Charanka facilitated replication in other states, such as Rajasthan and Madhya Pradesh, where analogous concepts have been implemented. The Rewa Ultra Mega Solar Park, a collaborative effort between Madhya Pradesh Urja Vikas Nigam Limited and SECI, is an example public-private partnership model. It implemented novel payment security measures and attained unprecedented low solar prices, therefore drawing international investors and bolstering India's prominence in renewable energy (Burgess, et al., 2021).

Collectively, these initiatives not only diversify India's energy portfolio but also advance climate action in accordance with SDG 13, by markedly decreasing carbon emissions and establishing a global standard for sustainable energy public-private partnerships.

Renewable Energy in Morocco

The Noor Ouarzazate Solar Complex in Morocco is a significant accomplishment in renewable energy and an effective exemplification of Public-Private Partnership (PPP). This extensive solar initiative, situated in the periphery of the Sahara Desert, ranks among the largest concentrated sun power (CSP) facilities globally, with an anticipated capacity exceeding 580 megawatts. It is an essential component of Morocco's goal to shift towards greener energy sources and diminish its dependence on fossil fuel imports (IRENA, 2016). The Noor Ouarzazate Solar Complex is developed by the Moroccan Agency for Sustainable Energy (MASEN) in partnership with many private investors and international financial entities, including the World Bank, the African Development Bank, and the European Investment Bank. This multi-stakeholder alliance demonstrates how public-private partnerships can utilise financial and technical knowledge from several entities to attain significant impact. The project is organised into phases (Noor I, II, III, and IV), each employing distinct solar technologies such as parabolic cribs and photovoltaic systems, with the objective of optimising efficiency and energy output (MASEN, 2019).

This effort directly promotes SDG 7 (Affordable and Clean Energy) by significantly enhancing the accessibility of renewable energy in the national grid and bolstering energy security. It also endorses SDG 13 (Climate Action) by aiding Morocco's pledge to reduce greenhouse gas emissions and enhance climate resilience. The facility prevents the release of more than 760,000 tonnes of carbon dioxide each year, representing a substantial advancement in environmental sustainability. The Noor project exemplifies how public-private partnerships, when synchronised with national policies and international sustainability objectives, can facilitate a low-carbon energy transition and act as a prototype for scalable, reproducible clean energy investments throughout the Global South (K. Obaideen et al., 2021).

HEALTHCARE DELIVERY IN KENYA: THE MANAGED EQUIPMENT SERVICES (MES) PROJECT

The Managed Equipment Services (MES) project in Kenya is an ambitious program designed to enhance healthcare services nationwide through a Public-Private Partnership approach. Initiated in 2015 by the Ministry of Health, the MES project aimed to rectify persistent deficiencies in diagnostic and treatment facilities within public hospitals, especially in distant and underserved areas. The initiative entailed collaborations with prominent international medical technology companies, including General Electric (GE), Philips, and Bellco, which were engaged to provide, install, maintain, and oversee critical medical apparatus, such as imaging devices, dialysis machines, and surgical instruments (Kenya Ministry of

Health, 2019) (Mirithu, 2021). In accordance with SDG 3 (Good Health and Well-being), the MES project sought to fortify healthcare systems by augmenting access to quality diagnostic services, improving early disease diagnosis, and minimising patient referral times. It also included training elements to enhance the capabilities of local healthcare staff in the operation and maintenance of the new technologies, thereby ensuring sustainability and long-term impact.

HEALTHCARE DELIVERY IN INDIA

India has utilised public-private partnerships to establish and manage diagnostic laboratories, particularly in states such as Rajasthan, Assam, and Uttar Pradesh, alongside digital innovations under Ayushman Bharat Digital Mission and Diagnostic Infrastructure India's healthcare system. Despite its extensive reach, encounters considerable obstacles in providing accessibility, affordability, and quality care, particularly in rural and underserved areas. The government has engaged in Public-Private Partnerships (PPPs) to enhance healthcare infrastructure and services, thereby addressing gaps and promoting SDG 3 (Good Health and Well-being). The Ayushman Bharat Digital Mission (ABDM), initiated in 2021, represents a significant advancement in this area. ABDM, developed in partnership with private technology entities, seeks to digitise health records, enhance hospital administration efficiency, and facilitate seamless teleconsultations nationwide (Government of India, 2020). Under ABDM, individuals are assigned a unique digital health ID that consolidates their medical history, test results, prescriptions, and treatment records in a secure and interoperable manner. Private IT firms are essential in the development and maintenance of digital infrastructure, as well as in offering platforms for telemedicine services. The incorporation of private e-pharmacies and diagnostic centres into the digital ecosystem enhances healthcare accessibility and provides real-time access to medical services, especially for remote and low-income populations (Nundy, 2021).

The Rajasthan government collaborated with private diagnostic firms through the Mukhyamantri Nishulk Jaanch Yojana to create and oversee more than 40 advanced laboratories providing complimentary pathology and radiology tests. The laboratories function under a hub-and-spoke model, with central facilities managing advanced diagnostics and peripheral units providing basic testing and sample collection (RMSC, 2019). The Health Department in Assam partnered with private agencies to modernise and operate diagnostic centres in government hospitals, thereby decreasing out-of-pocket costs and patient wait times. Public-private partnerships (PPPs) generally entail the government supplying infrastructure and patient volume, whereas private entities provide equipment, oversee operations, and train personnel under performance-based agreements.

Such partnerships facilitate prompt test results and the integration of data with public health surveillance systems (Government of Assam).

Together, these initiatives reflect a growing synergy between public health goals and private sector innovation. They not only enhance healthcare access and efficiency but also build resilient health systems capable of responding to future crises like pandemics, thus positioning PPPs as a cornerstone of India's healthcare development strategy.

KEY SUCCESS FACTORS

Political Will and Policy Support: Political commitment and coherent policy support are among the most critical enablers of effective Public-Private Partnerships (PPPs). In all three case studies examined; India, Morocco, and Kenya, governmental endorsement and the establishment of conducive legal and regulatory frameworks were foundational to success. In India, the NHDP gained momentum due to sustained political will across successive administrations, enabling the National Highways Authority of India (NHAI) to plan long-term and coordinate effectively with private developers. The enactment of the PPP policy framework and the establishment of a dedicated PPP cell within the Ministry of Finance also streamlined project approval and monitoring (Raghutla C., 2023).

Similarly, in Morocco, the government's national energy strategy and the creation of the Moroccan Agency for Sustainable Energy (MASEN) signalled a clear policy shift toward renewable energy. MASEN was instrumental not only in planning and executing the Noor Solar Project but also in attracting foreign investment by presenting Morocco as a stable and policy-consistent partner. In Kenya, the MES project was anchored in the government's Vision 2030 agenda and backed by the Ministry of Health, reflecting alignment between national development priorities and PPP initiatives (Moustakbal, J., 2023). Evidence from global practices reinforces that political will often determines the pace and quality of PPP execution. In countries like Chile and South Korea, where high-level political leadership actively champions infrastructure and social service PPPs, success rates tend to be significantly higher.

Clear Risk Allocation and Accountability, Effective PPPs hinge on clear delineation of roles, responsibilities, and risks among stakeholders. In India's NHDP, the use of standardized contractual models, especially the Build-Operate-Transfer (BOT) and Hybrid Annuity Models (HAM) that provided clarity on financial responsibilities, toll revenue sharing, construction deadlines, and maintenance standards. These mechanisms reduced ambiguity and built investor confidence by ensuring that risks were appropriately distributed: construction and operational

risks were borne by private players, while the government mitigated policy and land acquisition risks (Garg, 2019).

While, Morocco's approach to transparent procurement and clear risk-sharing frameworks in the Noor project contributed significantly to investor confidence. For instance, power purchase agreements (PPAs) were structured to guarantee a fixed price and long-term returns, while multilateral institutions offered risk mitigation instruments such as partial risk guarantees. This predictable and transparent environment fostered accountability and facilitated timely project completion. International best practices, such as the UK's Private Finance Initiative (PFI), have shown that poorly defined risk allocation often leads to project delays and cost overruns. Hence, the clarity and fairness of contract terms play a pivotal role in PPP outcomes, especially in environments where institutional capacity is still developing (Komodenteva, 2011).

Local community engagement is essential for ensuring that PPP projects are socially sustainable and locally accepted. Projects that proactively involve community stakeholders not only enjoy smoother implementation but also yield more inclusive and lasting benefits. In Morocco's Noor Solar Project, community engagement went beyond job creation. MASEN launched programs to train local workers, promote environmental education, and support small business development in surrounding areas. This engagement generated public goodwill and minimized opposition, which is often a barrier in large infrastructure projects.

In Kenya's MES project, the training of healthcare workers and integration of local hospitals into national diagnostic networks exemplified an effort to embed the project within existing community health systems. Although the project faced criticism, localized staff involvement and facility upgrades helped increase community trust in public health services. ***The India NHDP project*** also incorporated community feedback mechanisms and relocation plans for displaced populations along highway corridors. While challenges remain in ensuring full community benefit, structured stakeholder consultations contributed to minimizing legal disputes and project delays. ***Globally***, initiatives like Brazil's sanitation PPPs and Colombia's education infrastructure PPPs have shown that participatory planning processes enhance project relevance and effectiveness. Thus, meaningful community involvement is not only a moral imperative but a practical necessity for achieving SDG-aligned outcomes through PPPs.

CHALLENGES IN PPP IMPLEMENTATION

While Public-Private Partnerships (PPPs) offer significant promise in achieving Sustainable Development Goals (SDGs), their implementation in developing countries is fraught with challenges that can impede their success and sustainability.

Corruption and Governance Issues: One of the most persistent challenges facing PPPs in developing contexts is the prevalence of corruption and weak governance. The lack of transparency and accountability in the procurement, implementation, and monitoring phases can lead to inflated project costs, substandard service delivery, and public distrust. Kenya's Managed Equipment Services (MES) project, despite its ambitious scope, has faced serious allegations of inflated procurement costs and non-transparent contracting processes (Batjargal, et al., 2021). Such issues highlight the need for stringent oversight mechanisms, independent audits, and clear procurement guidelines. In Nigeria, for example, PPP projects in the power sector have also struggled with corruption allegations, leading to underperformance and financial losses. Establishing anti-corruption units and leveraging digital technologies for e-procurement are emerging strategies to address this challenge.

Limited Institutional Capacity: Many developing countries grapple with limited institutional capacity, which affects their ability to effectively plan, negotiate, and manage complex PPP contracts. This includes a shortage of skilled professionals in areas such as project finance, legal structuring, and contract enforcement. As a result, governments may enter into unfavourable agreements or fail to adequately monitor private partners. For instance, in several African and South Asian countries, the absence of dedicated PPP units or sufficient legal expertise has led to delays, renegotiations, and even the termination of projects (Ibrahim, 2024). The establishment of centralized PPP units with cross-sectoral expertise, such as India's PPP Cell under the Department of Economic Affairs, can help address this gap. Additionally, capacity-building programs supported by international organizations such as the World Bank and UNDP are crucial in enhancing institutional capabilities.

Policy Inconsistencies: Frequent changes in policies, unclear regulatory environments, and bureaucratic inertia are major deterrents to private investment in PPPs. In many developing countries, abrupt shifts in government policies or delays in obtaining approvals can stall project implementation and increase costs. For example, in South Africa, inconsistent energy policies have disrupted several renewable energy PPP initiatives, causing uncertainty for investors. Similarly, in India, land acquisition delays and changing environmental regulations have slowed the execution of highway and energy projects. Private sector stakeholders often seek long-term predictability and regulatory clarity, which are essential for mitigating risks and ensuring sustained engagement. Governments must work towards creating stable, transparent, and investor-friendly policy environments to foster trust and encourage private participation (Batjargal, 2021). Addressing these challenges requires a multi-pronged approach, including legal and institutional reforms, the adoption of international best practices, and stronger mechanisms for stakeholder engagement and accountability. Without these, PPPs may fail to deliver on their potential to advance the SDGs effectively and equitably.

STRATEGIC RECOMMENDATIONS

To effectively utilize Public-Private Partnerships (PPPs) for promoting Sustainable Development Goals (SDGs), developing nations need to implement a systematic approach. This includes developing comprehensive legal and regulatory structures, enhancing transparency through public disclosure of contracts and audits, and enhancing institutional capacity through training and knowledge dissemination. A clear legal framework is crucial for successful PPP execution, with countries like India and Chile implementing standardized frameworks. Transparency and accountability are essential for maintaining public trust and mitigating corruption. Training and knowledge dissemination are also essential for effective PPP project management. Designing PPPs to incorporate inclusive development objectives is crucial for ensuring their benefits extend to marginalized communities. This includes integrating social impact assessments, conducting community discussions, and establishing monitoring procedures. Examples of successful PPPs include Morocco's Noor Solar Project and Morocco's Noor Solar Project. These strategic recommendations will enhance the efficiency and credibility of PPPs while aligning them with the SDG agenda, promoting equitable and sustainable development in the Global South.

CONCLUSION

Public-Private Partnerships (PPPs) are a promising method for achieving Sustainable Development Goals (SDGs) in underdeveloped countries by bridging infrastructure, healthcare, education, and sustainable energy deficiencies. Case studies like India's National Highways Development Project, Gujarat Solar Park, Ayushman Bharat Digital Mission, Morocco's Noor Ouarzazate Solar Complex, and Kenya's Managed Equipment Services show that PPPs can yield significant development results when supported by robust governance, strategic planning, and inclusive design. The success of these initiatives depends on factors like robust political commitment, cohesive policy and regulatory frameworks, and transparent risk-sharing systems. Incorporating community engagement and social development objectives into the design ensures sustainability and enhances public legitimacy. However, challenges like governance deficiencies, institutional capacity limitations, and policy fluctuations can hinder PPPs' potential. Governments should focus on systemic reforms, such as developing institutional capacity, improving regulatory predictability, ensuring transparency, and promoting a participatory approach to planning and implementation.

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SUSTAINABLE DEVELOPMENT GOALS: INSTITUTIONAL MECHANISM IN INDIA

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Abstract

Sustainable development is the only answer to the imminent threat posed by the unbridled race for development and the huge environmental degradation of the earth. The United Nations and its members' adoption of Sustainable Development Goals as a global agenda in 2015 as the Vision 2030 is a major step towards this end. To realize this every nation has to develop a legal and institutional mechanism. India which contains 17 per cent of the world population has a significant role to play in this regard. The present study employs an analytical research method to understand the existing data on the institutional mechanism for SDGs from the central to the grassroots level to identify the disparities. The study finds that there is a huge variation in the structure and functions of the existing organizational setup. It suggests an integrated and empowered nationwide organizational structure for achieving Sustainable Development Goals.

Keywords: Sustainable Development Goals, Institutional Mechanism, United Nations, India, Public Administration.

INTRODUCTION

The reckless race for development has caused immense damage to the earth, the only habitat of human beings and other living things. The imminent threat has created an alarm among the nations and demands for immediate course correction. Sustainable development is the only answer to mitigate the loss. It involves utilizing

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the available resources in a way that preserves resources for future generations and adopting appropriate strategies of development that meet the demands of the present without compromising the future. The concept of Sustainable Development originated at the end of the 1970s. For the first time, environmental issues were formally recognized as a global problem at the United Nations Conference on the Human Environment in 1972 held at Stockholm in Sweden (Soini, 1973). This conference gave rise to a new concept, Sustainable Development. Now it has become a global agenda after the adoption of Sustainable Development Goals in 2015 as the Vision 2030 by the United Nations. Each country is redrawing its plans and strategies to suit the requirements of Sustainable Development.

In this context, Public Administration has a major role in achieving Sustainable Development Goals. The United Nations' first public sector report, *Globalization and the State 2001*, mentions that "eradicating poverty and ensuring sustainable development should form the *raison d'être* of Public Administration". Achieving the MDGs and their objectives depends on effective governance and public administration. It requires a unique style of public administration that has a commitment not just to effective management but also to changing the world to a better place (Bertucci & Rosenbaum 2007). The role of public administration has a paradigm shift from its traditional regulation functions to agent of change and development. An effective administrative system is essential for sustainable development. Aisha Ghaus-Pasha has noted that without sound governance, no country can expect to make sustained progress in human development and poverty reduction (Ghaus-Pasha, A. 2007). Thus, a robust administrative mechanism from top to bottom is inevitable, particularly in a vast country like India which supports 17.7 per cent of the world population.

Sustainable Development Goals and targets will stimulate action in critically important areas such as; poverty, hunger, education, health and well-being, education, gender equality, water and sanitation, energy, economic growth and decent work, infrastructure, industry, and innovation, reducing inequalities, sustainable cities, consumption and production, climate action, ecosystems, peace and justice, and partnership. This comprehensive agenda recognizes that it is no longer sufficient just to focus on economic growth, but on fairer and more equal societies, and a safer and more prosperous planet. It recognizes that the tasks of peace, justice, environmental protection, and industrial development are not disconnected from each other, but part of the same change. It recognizes, above all, that global and interconnected challenges can only be fought with global and interconnected solutions. It is an ambitious plan that will require a renewed global partnership between governments, businesses, civil society, and individuals. As we make progress towards achieving the 169 targets, we will reorient national and global development on a more sustainable and resilient path.

In this context the present paper analyses the existing institutional mechanism for the implementation of Sustainable Development Goals in India. The paper provides inputs for the policymakers to strengthen the existing mechanism from the top to the grassroots level to fulfil the global commitment on SDGs.

OBJECTIVES OF THE STUDY

1. To analyze the efficacy of the institutional mechanism in achieving the Sustainable Development Goals in India.
2. To identify the disparities and best practices in the existing institutional mechanism.

METHOD

It is a qualitative research study. The researchers have applied the analytical method to understand the institutional mechanism in India for implementing sustainable development goals. The data has been collected through secondary sources, viz. government documents and reports, reports of NITI Aayog, articles published in research journals and magazines, published and unpublished material, and relevant websites related to the research topic. The findings and inferences drawn from the data analysis are used to arrive at a logical conclusion and presented in the form of a research study.

INSTITUTIONAL MECHANISM FOR SUSTAINABLE DEVELOPMENT

The UN only provides a framework in the form of Sustainable Development Goals. Building institutions for the effective implementation of these goals is the domain of individual nations. The quality of effective institutions is a prerequisite to making progress in SDG (Kostel et al., 2017). The High-Level Political Forum (HLPF) assembled in New York in 2016 with the mandate to follow up and review how the 2030 Agenda for Sustainable Development was carried out. This Forum felt that a strong, stable, and well-settled 'institutional mechanism,' is essential for the implementation of SDGs (United Nations, 2016).

NATIONAL LEVEL MECHANISM IN INDIA

In India, there is no specific institution to implement the SDGs whereas NITI Aayog currently works as a nodal agency. It is a premier think tank of the government and has been entrusted with the task of coordinating the SDGs. NITI Aayog has undertaken the mapping of schemes related to the SDGs and their targets and has identified lead and supporting ministries for each target. They have adopted a government-wide approach to sustainable development, emphasizing the interconnected nature of the SDGs across economic, social, and environmental

pillars. States have been advised to undertake a similar mapping of their schemes, including centrally sponsored schemes.

NITI AAYOG

NITI Aayog, identified as the nodal agency for the country for coordination and overseeing the implementation of SDGs, has undertaken various mainstreaming activities. A multi-disciplinary Task Force has been set up to analyze and review the implementation of SDGs.

NITI Aayog, tasked with the preparation of Vision, Strategy and Action Agenda documents and identification/allocation of national targets, had prepared A Three-Year Action Agenda and Strategy for New India @75 document.

NITI Aayog had organized stakeholders' workshops, consultations, and meetings. At the state level, initiatives were undertaken to raise awareness involving stakeholders, and capacity-building of officials (NITI Aayog, 2019).

COLLABORATING MINISTRIES

As SDGs cover almost every area of development all important ministries are directly or indirectly engaged in the implementation of the SDGs. However, the NITI Aayog is working with close associations lead ministries such as the Ministry of Finance, Ministry of Statistics and Programme Implementation, Ministry of Education, Ministry of Health and Family Welfare, Ministry of Women and Child Development and Ministry of Development of North Eastern Region (NITI Aayog, 2020).

In addition, the Ministry of Statistics and Programmed Implementation (MoSPI) has been playing a crucial role in developing national indicators and formulating the National Indicator Framework (NIF) to monitor the SDGs targets. These statistical indicators are the backbone for monitoring and measuring the outcomes of the policies on SDGs at the national and state level (NITI Aayog, 2022).

It has also developed the India SDG Dashboard with the collaboration of the United Nations Resident Coordinator Office (UNRCO) to bring data to the fingertips of decision-makers at the national, state and district levels, helping to exactly identify the gaps that need to be addressed, and measure the success of the existing development programs (NITI Aayog, 2023).

SDG Unit: SDG Unit has been created in the Social Statistics Division (SSD) of the Central Statistics Office to develop a National Indicator Framework for monitoring the progress of the SDGs targets. It establishes a coordination mechanism with various lead ministries and departments. The Unit acts as a data focal point for

the country to coordinate data related to SDG activities at the global and national levels. It also assists states and union territories in the establishment of a monitoring framework. Further, it is also responsible for conducting capacity development programmes for the staff of the statistical institutions involved in SDG activities at the national and state level (NITI Aayog, 2019).

STATE LEVEL MECHANISM

In the federal structure of the country, state governments play an important role in the implementation of India's SDG Agenda. There is no uniform institutional mechanism at the state level but several states and union territories have taken up a number of initiatives and programmes for the localization of the SDGs. The Department of Planning and Statistics as the nodal agency is responsible for developing the SDG Vision document for the states (NITI Aayog, 2020). It coordinates with the line departments of the states in finalizing the priorities of SDGs and allocation of budget accordingly. It *also carries out capacity-building initiatives on the SDGs. However, the states and UTs have created their own institutional structure for implementing the SDGs in accordance with their specific needs.*

SDG CELL

In each state a separate professional unit known as an SDG Cell is established for inter-connected and multisectoral focus of the SDGs. It works in collaboration with the Department of Planning and Statistics of the state. The SDG cell is responsible for coordinating with lead departments to implement the SDGs at the state and district levels. Providing support towards the preparation of materials for training, and developing courses for capacity-building for the SDGs is also the responsibility of this cell (NITI Aayog, 2020).

Office of the Chief Secretary: As the administrative head of the state and advisor to the Chief Minister, the Chief Secretary has an important role in guiding and overseeing the implementation of SDGs in the State. The office of the Chief Secretary is also responsible for reviewing and monitoring the achievement of SDG goals and targets (NITI Aayog, 2019).

In some states, he chairs the state-level committee responsible for SDGs (NITI Aayog, 2020). For instance, in Tamil Nadu, a High-Power Committee is working under the chairmanship of the Chief Secretary to oversee the implementation of SDGs (Government of Tamil Nadu, *n.d.*). In Karnataka a state-level Advisory Committee under the chairmanship of Chief Secretary to Government and State level Monitoring and Coordination Committee under the chairmanship of

Additional Chief Secretary is constituted to oversee the implementation of SDGs (Government of Karnataka, 2019).

PLANNING DEPARTMENT

As the nodal agency, the state Planning Department coordinates the implementation of SDGs at the state level. It is a key player within the state government to take the lead in the adoption, prioritizing, achieving time-bound targets, periodic monitoring and reporting. It also coordinates with other line departments engaged in the implementation and with the NITI Aayog. Nodal officers have been designated for each of the SDGs to support effective implementation and better coordination among line departments (NITI Aayog, 2022).

In Andhra Pradesh, the Planning Department is responsible for the organic link within the SDG framework, identification of concern areas and design of strategies, and real-time progress reporting. The periodic data for SDG reporting is obtained from all concerned departments through the State Indicator Monitoring Framework (SIF) managed by the Andhra Pradesh State Development Planning Society (APSDPS) under the Planning Department (Government of Andhra Pradesh, *n.d.*).

Directorate of Economics and Statistics: The Directorate of Economics and Statistics (DES), an organization under the Planning Department and the statistical arm of the state government, is responsible for collecting data on SDG indicators from line ministries and the institutions involved in the implementation of the SDGs at the district and local level.

Collaborating Departments: The line departments are ultimately responsible for formulating, implementing, and monitoring programmes which contribute to achieving SDGs. In many instances, more than one department is engaged in achieving a particular goal. In states like Tamil Nadu Working Groups for the implementation of the SDGs is constituted with all the heads of the concerned departments. Eight thematic Working Groups have been constituted with Secretary of the nodal department as chairperson and related departments included in the group. State specific indicators have been identified in consultation with the departments pertaining to the goal and target (Government of Tamil Nadu, *n.d.*).

Some states like Telangana have clubbed two or more departments involved in the implementation of a particular goal such as for achieving the 'No Poverty' goal departments of Panchayati Raj & Rural Development and Municipal Administration & Urban Development are tagged (Government of Telangana, *n.d.*). Whereas in Karnataka, 17 Goal Committees under the chairmanship of retired IAS officers for the finalization of indicators and to implement SDGs are working (Government of Karnataka, 2019).

Moreover, the departments provide details regarding the programmes and schemes mapped to the relevant targets and indicators. The concerned department also acts as the repository of the data for the SDG indicators. Inter-departmental cooperation and coordination is crucial for achieving the agenda of the SDGs.

DISTRICT-LEVEL MECHANISM

The district is a crucial unit in localizing and implementing the SDGs as it has a direct connection with the people. Competent administrative leadership and a dedicated group of key functionaries at the district level are essential to coordinate actions and processes for achieving SDGs in an inclusive way, involving various stakeholders. At the grassroots level, district administration, and front-line functionaries are vital for the implementation of SDGs.

For the localisation of SDGs NITI Aayog issued guidelines for the establishment of District Level Committees and District SDG cells and to prepare the District Indicators Framework (DIF). Several states have set up High-Level Committees at the district level headed by district collectors with senior district functionaries as members. In addition, some states formed SDG cells under the chairmanship of district collectors. In Gujarat, the state Planning Division is continuously working on the localization of SDGs through DLC, SDG cell which includes sensitization of district-level functionaries (Government of Gujrat, 2021). Whereas, the Telangana government designated the Chief Planning Officer as the nodal officer under the administrative control of the District Collector for monitoring the implementation of SDGs at the district level (NITI Aayog, 2022).

However, all the states are not following similar administrative arrangements and there is a huge variation in the institutional mechanism at the district level. Some states are having well-developed organizational mechanisms whereas some states have skeletal arrangements. For instance, in Assam, there are well-developed separate SDG-centric District Level Committees on par with the existing District Development Committees to deliberate solely on SDGs related matters. These committees work under the chairmanship Deputy Commissioner with District Development Commissioner as Vice Chairperson, CEO Zilla Parishad, Additional Deputy Commissioner (Development), and two representatives each from civil society organisations, Academic Institutions, Private Sector/Industry/Associations, Youth Groups, Women's Groups/SHGs federation, Urban Local Bodies as members. MP/MLAs from the district, District Prabhari, and District heads of Development Departments will be special invitees. Senior Planning Officer designated as the district SDG officer acts as the member secretary of the District Level Committee on SDGs (Government of Assam, 2019).

The duties and functions of these District Level Committees are also well-defined. The DLC will meet once in a quarter and recorded minutes to be submitted to the concerned department. District Planning Cell in the DC Office will act as the Secretariat for the smooth functioning of the DLC. The main functions of DLC are; the identification of district priority areas based on the performance of social, economic, and environmental indicators and the responsible implementing departments/schemes/projects and other stakeholders. Identification of vulnerable groups and administrative blocks/GP and ULBs. Consultation with the departments and stakeholders for mitigating difficulties/hindrances in the implementation of SDGs, formulation of locally relevant strategy, forging of partnerships with local level academic institutions, civil society organizations, industry and CSR, Youth groups, SHGs federations, suggest needs for capacity building of functionaries and key policy level strategies and interventions to the Government for approval, to oversee preparation and approval of District Vision, Strategy and Action Plan for SDGs and monitoring through a dashboard. Quarterly/Monthly reviews of existing schemes/projects and course correction for effective strategies and interventions will also be the responsibility of the District Level Committee.

BLOCK LEVEL MECHANISM

For localizing the SDGs there is a need to establish a strong administrative mechanism at the block/samithi/mandal levels also. In this context, the organizational structure for the SDGs in the state of Assam can serve as a model. The state has established a block-level Committee on SDGs with a well-defined structure and functions.

The Composition of the Block Level SDG Committee consists of CEO Zilla Parishad/DDC/ADC/PDDRDA as chairperson Anchalik Panchayat President, Extension Officers (Domain specific), Block level officials from the line departments, all GP Presidents within Block and two representatives each from Civil Society Organization, Academic Institutions, Private Sector/Industry/Association, Youth Groups, Women's Groups/SHGs federations are members of the committee. Local MLAs will be the special invitees. BDO will act as the Member Secretary of the Committee.

The Duties and Functions of the Block Level Committee are; to assist, guide and coordinate with GP/VCDC(BTC)/VDC(KAAC) level committee or Constituency level Committee for formulation of the integrated plan and implementation of same in the identified priority areas under the block. It is also responsible for the collection of reports from GPs/VCDCs/ and reporting to DLC (Government of Assam, 2019).

VILLAGE LEVEL MECHANISM

The village is the focal point for the implementation of SDGs. The success of the SDGs depends on the proper utilization of men and material resources at the village level. For this purpose, there is a need to integrate the gram panchayat with the goals of SDGs and develop robust mechanisms at the grassroots level for grounding the SDGs all over the country. The Gram Panchayat plays a crucial role in the facilitation of all programmes and policies on time and with adequate availability of resources.

In the state of Assam, the gram panchayat is integrated with the implementation of SDGs by establishing panchayat-level committees. The Panchayat Level Committee (PLC) on SDGs consists of the GP President as Chairperson, field level functionaries of GPs and the line departments in the GP and the Field officers of Revenue and Disaster Management are the members. Two representatives each from Civil Society Organizations, Academic Institutions, Private Sector/ Industry/ Association, Youth Groups, Women's Groups/SHGs federation are also selected as members in the first meeting of the PLC. GP Secretary will act as the Member Secretary (Government of Assam, 2019).

The Panchayat Level Committee will be responsible for identification and selection of villages in the priority areas and existing needs of the village based on GPDP. Identification of schemes and selection of beneficiaries in the priority areas and implementation of schemes, coordination and monitoring will also be under the purview of PLC. This committee collects data on the implementation of projects/schemes and submits the reports to the block.

ULB LEVEL COMMITTEE (ULC)

The success of SDGs in every ULB depends on competent administrative leadership and a dedicated group of key functionaries to coordinate actions and processes in an inclusive way, involving various stakeholders. In Assam, the ULB Level Committee on SDGs (ULC) are responsible for the implementation and monitoring of SDG Centric District Manual for achieving SDGs in its area.

ULB Level Committee for SDG consists of DDC as Chairperson, Chief Executive Officer of ULB as Vice Chairperson and four elected members of ULB, officers of Power, Forest, Pollution Control Board, Public Health, Engineering, Town & Country Planning, and other Government Departments are the members of the committee. Further representatives from Civil Society Organizations, Academic Institutions, Private Sector/Industry/Associations, Youth Groups, Women's Groups/SHGs federation are also selected as member of the ULC. Senior most engineer of ULB will be the Member Secretary of the committee. MLAs from the respective ULB and the Chairperson of the ULB will be the special invitees.

ULB Level Committee performs a number of duties and functions for the effective implementation of SDGs. It is responsible for the identification of priority areas/sectors, implementing departments/schemes/projects and vulnerable groups in ULBs. Consultation with the departments and stakeholders for mitigation of difficulties and formulation of locally relevant strategy is also undertaken by the committee. Monitoring, evaluation, review, course correction and the forging of partnerships with other stakeholders will be taken up by this committee. It also arranges programmes for the capacity building of ULB level functionaries. Thus, the ULC is responsible for the preparation of the Town Committee's Vision 2030 and Town Committee's Strategy and Action Plan and its approval by the District Level Committee (Government of Assam, 2019).

DISCUSSION AND ANALYSIS

For the effective implementation of policies and programme of the government, well developed organizational structure is inevitable. Since sustainable Development goals encompasses almost all walks of life there is a need to develop an institutional framework which is sufficiently empowered with strong network from the top to the bottom particularly in a country like India with huge population and diversified society.

Implementing Sustainable Development Goals involves commitment and coordination of numerous ministries, departments, states, and local governments. The government of India has made NITI Aayog as nodal agency for the implementation of SDGs for the whole country, which is neither constitutional nor a statutory body. It also lacks sufficient expertise and human resources in coordinating, integrating, monitoring, and evaluating the SDGs. The lead departments like Education, Health, Women and Child Welfare, Agriculture, Food and Civil Supplies, Rural Development, Urban and Housing and Environment are responsible for the implementation of different SDG goals. There are no specific units under these ministries at the central level to focus on SDG targets. NITI Aayog can only perform the advisory functions and act as the store house of information but it has no *locus standi* to direct and guide the lead ministries as it is beyond its purview. Thus, there should be a national level committee under the chairmanship of Cabinet Secretary and heads of all the lead ministries as the members. The Secretary of the Planning and Statistical department should provide secretarial assistance to this committee and its secretary should serve as the Member-Secretary. This will be an Empowered Committee which can direct and guide the lead departments in the implementation of the goals. The other stakeholders from Academics, industry and civil society can also be drawn into the committee as special invitees. Moreover, a special SDG unit should be created in the PMO office.

At the state level there is no similar organizational structure for SDGs. Each state is having its own institutional setup. There is a huge variation with some states having well developed organizational set up whereas in some states there is only skeletal arrangement. Majority of states notified planning department as the nodal agency for achieving agenda 2030. In each state an SDG Cell is established which works in collaboration with the Department of Planning and Statistics of the state. In states like Tamil Nadu, a High-Power Committee is working under the chairmanship of the Chief Secretary to oversee the implementation of SDGs. In Karnataka separate state-level committees for Advising, Monitoring and Coordinating are working under different departments.

The state Planning Department is coordinating the implementation of SDGs and taking the lead in the adoption, prioritizing, achieving time-bound targets, periodic monitoring and reporting with the help of Nodal officers. However, states have adopted different approaches for the implementation and monitoring of the SDGs. In Tamil Nadu eight thematic Working Groups constituted with the Secretary of the nodal department as chairman for the implementation of the SDGs. Some states like Telangana have clubbed two or more departments involved in the implementation of a particular goal. Whereas Karnataka has created 17 Goal Committees under the chairmanship of retired IAS officers for the finalization of the indicators and implementation of SDGs. Making retired IAS officers as the heads of these committee creates more power centers leading to confusion and conflict as the secretaries of the departments are ultimately responsible for the implementation. Clubbing many departments for one SDG will create problems of command and control.

Thus, there is a need for similar organizational set up in all the states with a state level High Power SDG Committee under the chairman ship of the Chief Secretary responsible for the implementation and monitoring of the SDGs. Similarly, each goal should be kept under one head who will be the Secretary of the department under which the SDG activities fall mostly. All these 17 secretaries shall be members of the state level SDG committee. Members from academics, industry and civil society can also be drawn into the committee as special invitees. The Planning Department should provide administrative and secretarial assistance and the Secretary of the department should be the member secretary of the committee. The state SDG Cell should provide the necessary data and act as the repository of the information. This High-Level Committee should work for the implementation, monitoring, reviewing, reporting and course correction.

District is an important unit in realizing the goals of sustainable development. A strong administrative set up will help in bringing desired changes. It is essential to involve various stakeholders in an inclusive way for achieving SDGs at the grassroots level. The institutional arrangements can vary across states, but the involvement of

various stakeholders and competent administrative leadership is key to achieving the goals. In this context the Assam model of localization of SDGs at district level can serve as an example. Assam has well-developed separate SDG-centric District Level Committees to deliberate solely on SDGs related matters, and the committees work under the chairmanship of the Deputy Commissioner. The committee's membership comprises representatives from civil society organizations, academic institutions, private sector/industry/associations, youth groups, women's groups/SHGs federation, and urban local bodies. Additionally, senior planning officers designated as the district SDG officer acts as the member secretary of the District Level Committee on SDGs. This model should be adopted across the country.

Similarly, there is no one organizational structure for the implementation of SDGs at the block and village levels throughout the country. At the block and villages levels and urban levels the state of Assam has a well-developed organizational set up. The block-level committee is responsible for assisting, guiding, and coordinating with the gram panchayat level committee for formulation and implementation of the integrated plan in the identified priority areas under the block. Similarly, Panchayat Level Committee (PLC) headed by Panchayat president and comprising of all the other stakeholders is responsible for identifying and selecting priority areas and existing needs of the village on the basis of gram panchayat development plan. At the urban level also the ULB Level Committee on SDGs (ULC), are formed with all the stake holders as members and working for the implementation and monitoring of SDGs in Assam.

The purpose of the achieving the vision 2030 of the Sustainable Development Goals can be met only if there is an empowered organizational structure from top to bottom as suggested in the present study with a national Level Empowered Committee under the Cabinet Secretary, the State Level High Power Committee under the Chief Secretary and the District Level Committee with district Collector as the head, Block Level Committee, Urban Level Committee and Panchayat Level Committee at the village level with all the important functionaries and other stakeholders as members. This integrated organizational structure will be effective in planning, implementation, monitoring, evaluation, and course correction of the Sustainable Development Goals.

Thus, there is a need for an integrated and empowered organizational structure which is not overlapping with the existing structure for the effectively implementation of the goals. Creating parallel structures for SDGs under different heads will lead to conflict and confusion and defeat the very purpose of the implementation. There should be similar organizational structure with well-defined powers and functions from central to grassroots levels.

CONCLUSION

While the progress of India in many development indicators is noteworthy, the issues of over population, environmental degradation, social justice, equity, and sustainable development are the major concerns. To address these concerns, India needs to concentrate on sustainable development rather than just development. The Sustainable Development Goals provide development frame work not only to India but also to the whole world to address these huge issues which have a major impact on our common future. India which is partner to the commitment of Vision 2030 agenda of Sustainable Development Goals need to work towards this end by building robust administrative mechanism and involving all the major stake holders as the partners in the development. The findings of the present study shows that there are some best practices in the implementation of the SDGs in India which need to be augmented and mainstreamed to build an effective organizational structure for SDGs which can serve as model. The success of SDGs will not only prove as a game changer in India but also shows the path to other countries of the world.

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REDESIGNING WASTE MANAGEMENT: SUSTAINABLE STRATEGIES FOR A BETTER TOMORROW

Junaid Khan*

Abstract

With the rise and expansion of urban population in India, the volume of municipal solid waste (MSW) has also been growing substantially. On the other hand, the MSW poses danger not only to environment but human health also because of poor solid waste management. This waste ultimately finds its way to landfills, open dumping sites and water bodies causing soil, water and air pollution. Solid waste management involves collection, transportation, disposal and recycling. The sustainable strategy for proper solid waste management bases on the principle of waste-to-resource, i.e. 3Rs Reduce, Reuse, Recycle practices. The present paper intends to examine the status of MSW management in Indian cities, trace the challenges and offer suggestions for proper MSW management. The paper, based on secondary sources of data, finds that Solid Waste Management is a crosscutting sector of urban management that has significant impact on quality of life, community health and environment and goes to suggest the urgent need of shifting from conventional approach of MSW management to waste-to-resource approach in order to achieve sustainable development goals.

Keywords: Integrated Solid Waste Management, Municipal Solid Waste, Waste-to-Resource Approach, Environment, Economy, SDGs.

INTRODUCTION

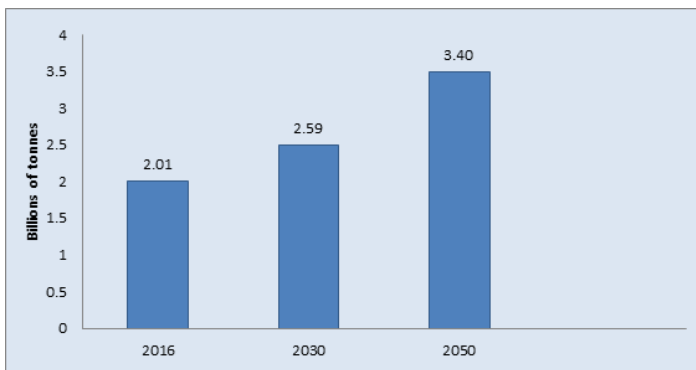
Waste management and collection are crucial community services required for safeguarding environment and community health. Proper Waste Management is vital for effective urban management policy and flourishing economy. The world population estimated at 8 billion and with present (2023) growth rate of 0.84% is

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estimated to reach 10 billion by 2057 (Worldometer, 2023). The growing population has a direct relation with increased levels of waste generation. According to UN “Globally, 2.01 billion metric tonnes of municipal solid waste is generated each year, of which 33% is not handled in a sustainable manner, 70% end up in landfills, 19% are recycled, and 11% is reused to turn waste into energy. Up to 14 million tonnes of plastic garbage enter aquatic environments each year, and around 931 million tonnes of food are lost or wasted” (United Nations 2023). The waste generation is anticipated to more than double in size during the same time, from 2.59 billion tonnes in 2030 to 3.40 billion tonnes in 2050 (Kaza et al. 2018a).

The cost of managing solid waste eats up a considerable portion of municipal budgets – up to 20–50% in certain smaller communities, according to UN HABITAT (2010). Sustainable waste management seeks to reduce waste generation, natural resource consumption, and reuse as many materials derived from the environment as is viable. Resource recovery could improve the income base to fund SWM expenditure and reduce the load on local authorities by turning solid waste to material or energy. It is our duty to guarantee sustainability in order to save the planet for present and future generations. An effective sustainable system for managing waste must have feedback chains, a process-driven methodology, flexibility, and waste diversion. The shift from the conventional make-use-dispose production paradigm to a more circular economy is the primary component of sustainable waste management, using approaches like integrated solid waste management, 3R's of waste management and zero waste strategy.

Figure 1: Projected Global Waste Generation



Source: World Bank 2018.

SOLID WASTE MANAGEMENT SYSTEM

Solid waste management remains a crucial component of all human societies. Solid Waste Management (SWM) aims to efficiently collect, transport, process, and disposal of waste at every stage, starting from the point of waste generation to its final

disposal. SWM ensures protection of environment and human health. Maintaining clean and healthier communities requires proper SWM to reduce the pollution and its detrimental effects on the environment. SWM tries to mitigate air and water pollution, soil contamination and Greenhouse gas emissions. Sustainability must be observed in this area so that every bit of trash can be managed effectively rather than simply being dumped in landfills. Proper waste management is a critical component of community health and environment. While being one of the most ineffectively administered services, Solid Waste Management is one of the most fundamental and crucial services managed by Local Governments. The strategies used are unscientific, obsolete, and inefficient (Asnani 2006). The cost of managing solid waste eats up a considerable portion of municipal budgets up to 20–50% in certain smaller communities, according to UN HABITAT (2010).

WASTE MANAGEMENT AND SUSTAINABILITY

Over a period of time rapid urbanisation and population growth in developing countries have caused a spike in unemployment and poverty rates, infrastructure and social services issues, environmental issues, and other negative socio economic and environmental effects. As a result, the necessity of achieving the Sustainable Development targets was acknowledged globally.

Sustainable waste management is a process employing some specific practices and strategies to minimize negative environmental impacts of waste disposal. Sustainability is the ability of a dynamic framework to persist into the foreseeable future by integrating social, environmental, and economic considerations into waste management practices (Satyro et al., 2017). Global efforts are now in force to reorient SWM systems towards attaining sustainability. The UNGA in 2015 ratified Sustainable Development Goals as “a worldwide call to action to end extreme poverty, protect the environment, and provide peace and prosperity for humanity on the planet by the year 2030”. SDG’s encompass numerous sectors of Urban Governance, Solid Waste Management is one of the important sector. Environmentally sound waste management impacts many crucial facets of development (Kaza et al., 2018b). The management of solid waste, often known as SWM, is a problem that cuts across multiple sectors and may be directly connected to 12 of the 17 Sustainable Development Goals set by the United Nations which emphasises the importance and political priority and urgency of Solid Waste Management (Rodic-Wiersma and Wilson 2017). These global goals can be achieved if waste management is recognised as a powerful driver of sustainable development. Solid Waste Management possesses the capacity to achievement and improvement of many indicators of SDG’S directly and indirectly. SDG’s, Paris Agreement on climate change, and New Urban Agenda (NUA) are among the many international commitments and agreements towards achieving sustainable waste

management. Global efforts are now in force to reorient SWM systems toward sustainability.

BEYOND THE 3R'S OF SWM

One of the ways to keep as much waste out of landfill is putting 3R's (Reduce, Reuse, Recycle) of waste management plan into action. The 3R's initiative was developed in early 2000's at the G8 Sea Island Summit in June 2004. The three R's principle stands for reducing waste, Reusing and Recycling resources and products.

Reduce means reducing the amount of waste produced, less consumption will lessen the rate of recycling and reuse.

Reusing anything implies to put it to use again for its original function or to repurpose it for another use. Reusing minimizes the quantity of waste produced.

Recycle: The term "recycle" describes the process of converting waste into a resource that may be utilised to manufacture new products or rebuild old ones.

The fundamental principle behind 3R's is waste minimization. The 3R's is also referred to as waste hierarchy as in fig 3 below, that categorise waste management strategies according to their desirability in terms of optimising product utilisation and minimising refuse production. Due to accelerated population growth and urbanisation, the need for reusing and recycling of wastes has become more important over time (Umar et al., 2016). Reduction or minimization is aimed at decreasing or reducing the amount of waste generated, after prevention it is considered as the second most crucial strategy for achieving sustainable development. Reduction is followed by reuse. The approach of reuse should theoretically be used after all reducing options have been explored. Reuse is the practise of "reusing" a product or substance that has been abandoned, but that a product or substance be used in its unaltered form, whether that be in the manner for which it was designed to be utilised or in a new manner, but without undergoing any kind of physical or chemical modification if reduction and reuse are not possible. Recycling refers to the process of turning waste into a resource that may be used to create new products or to remake existing ones. The object or substance that has been collected may be processed either physically or chemically utilizing the recycling option in order to reclaim the valuable components or elements. The 3R's strategy leads towards sustainability and zero waste conserves valuable resources and protects environment by cutting down air water and soil pollution by reducing quantity of waste going to landfills. At the same time contributing to the economy and generating green jobs. The initial 3R's model is gradually evolving towards including more R's to further broaden the spectrum of sustainable waste management, such as the 5R's of conservation and 7R's of sustainability (Earth Reminder n.d.)

5R'S OF CONSERVATION OF RESOURCES

Repurpose, Reduce, Refuse, Recycle, Reuse

7R'S OF SUSTAINABILITY

Rethink, Refuse, Reduce, Reduce, Repair, Re-gift, Recycle

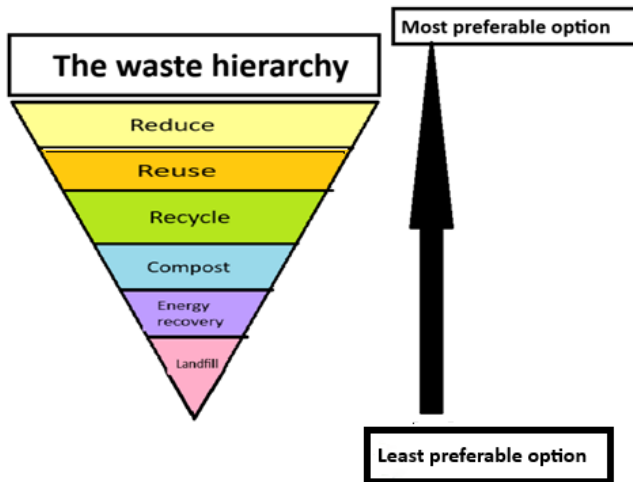


Figure 2: Solid Waste Management Hierarchy

Source: Dong, Liu, and Bian 2021.

ZERO WASTE STRATEGY

The zero waste strategy is a visionary approach to sustainable waste management. According to ZWIA (Zero Waste International Alliance), “The conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health” The term “Zero Waste” refers to an economy that produces and consumes less trash while also keeping waste out of landfills (Zero Waste, 2023). It is not just an end rather a set of guiding principles which seeks to eliminate waste at any and every level of the process. The zero waste approach encourages the circular strategy to the way resources are used. Zero waste is the key to making circular economy into a reality. The concept also includes the 3R principle of Reduce, Reuse and Recycle, believed to be the foundation of environmental consciousness, as well as the promotion of ecological balance and the conservation of resources through the conscious conduct and choices of consumers (Song, Li, and Zeng, 2015). This concept

ensures the materials are utilised for as long as feasible before being returned to the environment with minimal or no detrimental effects on the environment. The products are reused, repaired, sold or refurbished within the system, recycling or recovering is opted if reuse and repair is not possible.

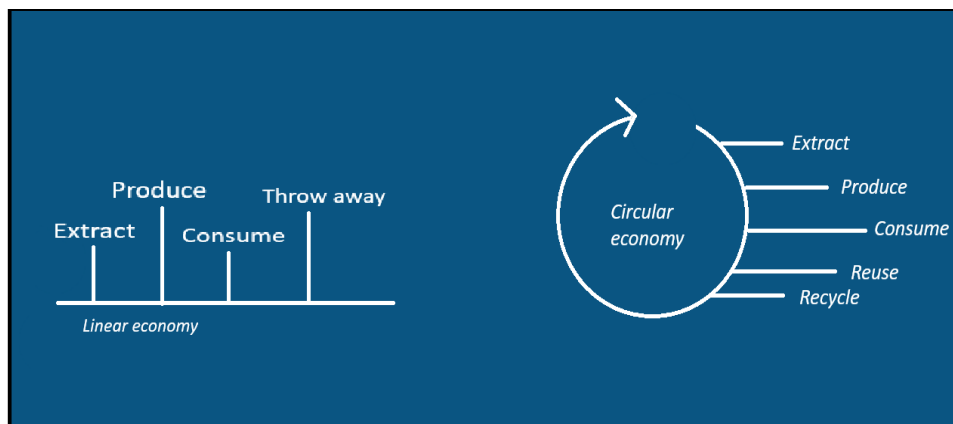
ZR (Zero Waste) is a shift from “Cradle to Grave” thinking, which is an open-loop system or a linear model that is inherently wasteful. Zero Waste approach promotes “Cradle to Cradle” thinking, which is a circular model that reduces pollution and maximises the reuse of resources. It is a “closed-loop” that strives for Zero Waste through Waste Reduction, Reuse, and Recycling thus promoting sustainability. Zero Waste measures can help achieve the goals and targets of the 2030 Agenda for Sustainable Development, such as SDG objective eleven and twelve recommended by the United Nations, which address all forms of waste, like wastage and loss of food, e-waste, and exploitation of natural resources.

CIRCULAR ECONOMY

According to the World Economic Forum, a circular economy is “an industrial system that is restorative or regenerative by intention and design”.

Circular economy also called as circularity or simple CE is a shift from the present linear economy which is based on extracting, producing, using, and throwing away model, believed to be inherently unsustainable. The public notion of trash has. As a consequence of the rapid rise in urbanisation and consumption rates as well as the depletion of natural resources, waste is no longer viewed as an unavoidable by-product of industrial economies but as a precious, reusable asset. The increased global interest in and investment in the circular economy serves as evidence of this transition (2030 Spotlight n.d).

Circular Economy is a type of economy that replaces the concept of “End of life” with a change in manufacturing, distribution and consumption operations, minimising, recycling, reusing, and recovering materials, in order to achieve a sustainable future. Promoting economic prosperity, social equity, and environmental quality for the benefit of both the present and future generations (Kirchherr, Reike, and Hekkert, 2017). The CE approach is traditionally built around the 3R's approach. The three R's are comparable to the circular economy approach in the waste management system (Manickam and Duraisamy 2019). It seeks to realise an ideal economic system in which pollution is minimised and more resources can be reused and recycled in closed-loop systems. The model of circular economy has the capability of boosting economic and resource optimisation in the whole system by promoting 3R techniques (Kaza et al., 2018b).

Figure 3: Linear vs. Circular Economy

Source: <https://www.repsol.com/en/sustainability/circular-economy/index.cshtml>

A Circular Economy minimizes resource consumption, redesigns products and services to be more resource-efficient, and recycles “waste” to produce new goods. The circular economy has the ability to safeguard the environment, enhance the economy, and advance social justice (U.S. EPA n.d.). A Circular Economy does more than only mitigate the negative effects of a linear one. Additionally, a shift to a circular economy creates opportunities for business and economic growth, benefits society and the environment, and strengthens the economy’s long-term resilience. Furthermore, it acts as a natural sky bridge for achieving SDG’s core objectives. The Circular Economy provides us the tools we need to simultaneously solve urgent social issues and the threat that climate change poses to biodiversity by reducing Greenhouse gas emissions and pollution, thereby enhancing resilience, prosperity and employment (Ellen MacArthur Foundation n.d). A report by Accenture predicts a \$4.5 trillion in value created by the Circular Economy (World Economic Forum 2022a). In order to move towards economies and communities that are more sustainable and resilient, the United Nations is presently collaborating with partners to provide incentives for circularity.

EXTENDED PRODUCER RESPONSIBILITY (EPR) LAWS

One of the many large scale interventions towards waste management that has the potential to help transition towards circular and low carbon economies is the concept of Extended Producer Responsibility (EPR). Waste management expenses account for an average of 19% of municipal budgets in low-income nations which often face budget deficits for waste management (World Bank 2022). Fundamentally, EPR seeks to implement the “Polluter Pays” principle by transferring the liability and financial cost of negative environmental effects

from public entities and taxpayers to producers, who are in a better position to design less inefficient, harmful, and noxious products before they become “Waste”. Thus EPR laws can considerably reduce economic burden on municipalities. According to OECD EPR is an organizational mechanism for the prevention and management of waste that contains certain types of products based on Polluter Pays principle. EPR is thus an action plan to shift the liability of End-of-Life product management from the general public to producers and other parties in the supply chain, while promoting changes to product design that reduce adverse effects on community health as well as the environment at all stages of product lifecycle. EPR serves as a tool to optimise product design, extending the useful life of materials and promoting recycling and reuse. It encourages companies to design more sustainable products and manufacturing processes including product reuse, buyback, and recycling programs. Manufacturers are incentivized to make their goods and packaging more environment friendly. Specific waste streams are typically the focus of EPR, most commonly small consumer electronics, packaging, tyres, vehicles, and batteries (Kaffine and O’Reilly, 2015). Global plastic production is expected to increase four times by the year 2050. Carbon dioxide emissions and plastic leaks will also rise as a result of this influx. It promotes waste collection and waste recycling rates and encourages minimizing plastic packaging from the design stage by making manufacturers liable for the effects of their products and packaging at the culmination of their useful lives. EPR as such is considered as a critical policy tool to this plastic pollution (World Economic Forum 2017).

Although EPR laws for packaging are currently the most advanced and accurate for products made of plastic, this obligation might also be applied to other industries (UNEP n.d.).

As a result, EPR may aid authorities in solving a variety of environmental issues, all while boosting economies, protecting social safety nets, and relieving local authorities of waste management responsibilities.

Businesses may get an early start on the Circular Economy transition, reducing regulatory and reputational risks and ensuring the rollout of affordable waste management strategies.

INTEGRATED SOLID WASTE MANAGEMENT

To begin with conventional Solid Waste Management focused on reduction of public health risks, it then aimed at environmental aspects, lately the dimension of conservation of resources and recovery has become a critical factor for SWM. As such 3R approach is applied as the guiding principle of SWM. Thus, SWM has evolved into ISWM to improve the whole waste management process, from waste segregation and collection through waste transfer stations followed by to waste

processing and recycling to ultimate disposal of waste. Initially, only municipal solid refuse was addressed. It is progressively expanding to include other waste-generating industries also (Memon, 2010).

According to the U.S. Environmental Protection Agency, “ISWM entails minimising waste, recycling, recovery, treatment, and disposal to accomplish operational efficiency, improve community well-being, and mitigate environmental risk in order to address the mounting challenges of MSW disposal in urban areas”.

ISWM is built around the waste management hierarchy (Fig. 2). ISWM is a holistic approach to manage municipal waste that maximises service efficacy and achieves the objectives of the 3R strategy. ISWM is closely linked to the 3R approach to waste management, which seeks to maximise efficiency and recovery of resources while decreasing the quantity of garbage sent to landfills. An evaluation of local demands and conditions should result in the choice of most suited amalgam of techniques and technologies based on this waste management hierarchy. Reduction of sources, reuse, composting, waste-to-energy conversion, environmentally sound disposal, and recycling are all preferred methods of waste management that reduce the load on municipal services while also benefiting public health and the environment. ISWM's ultimate goal is to enhance the efficacy of waste removal from all sources, including homes, businesses, public spaces, building sites, demolition sites, farms in urban areas, hospitals, and other medical institutions, parks and gardens. ISWM includes participation from all relevant parties, such as generators of waste, service providers, the informal sector, regulators, the government, as well as the society or individual families (CPHEEO, 2016).

The ISWM is focused with developing an acceptable fusion of contemporary waste management techniques to handle the trash as effectively as possible. The elements of ISWM include reducing sources, composting, recycling, waste transportation, and land filling (LiveAbout n.d). ISWM employs maximum amalgamation of available, suitable techniques of prevention, minimization, recovery and disposal of solid waste. ISWM strives to find a balance between three aspects of waste management: social acceptance, environmental efficacy, and financial viability. In the context of ISWM “Waste” has a negative connotation if it has not been exploited to its full potential and not processed to produce valuable energy or goods (Marshall and Farahbakhsh, 2013).

ISWM is a global, encompassing, multifaceted, and sustainable solution to the problems of Municipal Solid Waste Management (MSWM). ISWM contains the key to achieving sustainable waste management, public health, green employment, and economic growth.

CONCLUSION

Solid Waste Management is a crosscutting sector of urban management that significantly impacts quality of life, community health and environment. Waste management is among the major global challenge and crisis. However, there is a substantial and mostly untapped possibility for revolutionary change inside this crisis and challenge. In order to ensure a sustainable future, effective Solid Waste Management is essential for the preservation of scarce resources. Conventional strategies and processes have not yielded adequate results to face this challenge. The focus and strategies need a drastic shift from the conventional approaches and strategies to tackle this crisis. Global waste generation is increasing at a rapid rate and this increases the urgency with which we must concentrate on recycling, reusing, and recovery. With the rapid decline of natural resources and rapidly increasing quantity needs a change in our outlook to treat waste as resource or an opportunity. The waste to resource approach holds the key towards sustainable development and turn waste to generate social, economic and environmental gains. Now is the time to close the loop between the waste and the resource. The approaches, strategies needed towards this end should lead towards sustainable waste management. The approaches, strategies gaining momentum and attention lately at the global level are ISWM, Zero Waste approach, Circular Economy, EPR and 3R's. The application of these strategies and approaches has the prospective to not only transform waste into a resource and an opportunity, but also promote sustainable waste management and sustainable development.

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UNITED NATIONS EFFORTS IN RESPONSIBLE TECHNOLOGY INTEGRATION IN PUBLIC ADMINISTRATION FOR SUSTAINABLE DEVELOPMENT: AN ANALYSIS

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Abstract

This paper investigates the United Nations' (UN) efforts in promoting responsible technology integration in public administration as a means to advance sustainable development. With the rapid evolution of digital technologies, such as Artificial Intelligence (AI), e-government platforms, and data governance frameworks, the role of global governance has become crucial in ensuring that these tools are deployed ethically, inclusively in alignment with the Sustainable Development Goals (SDGs). The paper aims to analyze key UN initiatives-such as Resolutions A/RES/78/265 on AI's role in achieving the SDGs and A/RES/78/311 on international cooperation for AI capacity-building-alongside the global digital compact and the pact for the future. These frameworks are explored in the context of their impact on fostering transparent, accountable, and inclusive governance, particularly under SDG 16 (Peace, Justice, and Strong Institutions). The primary objective of the paper is to assess how effectively the UN has facilitated the integration of emerging technologies into public administration while addressing ethical, legal, and social challenges. Methodologically, the study employs a qualitative analytical approach. It conducts a comprehensive content analysis of UN resolutions, reports, and policy documents, including annual reviews etc. The findings suggest that while the UN has made significant strides in promoting responsible technology integration, challenges persist in ensuring equitable access, fostering global cooperation, and mitigating ethical risks. The paper concludes by offering suggestions to strengthen the UN's capacity to guide member states in adopting technology-driven public administration practices that are both sustainable and inclusive.

Keywords: UNSDGs, Public Administration, Technology Integration, AI, Ethical, Inclusive.

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INTRODUCTION

The transformative potential of technology in public administration has been evident throughout history, with each technological advancement reshaping governance structures, service delivery mechanisms, and citizen engagement. In the digital age, Artificial Intelligence (AI) has emerged as an essential tool in revolutionizing public service delivery, enabling governments to enhance efficiency, accuracy, and inclusiveness (Margetts & Dorobantu, 2019). By automating routine tasks, analyzing vast datasets, and providing predictive insights, AI empowers public administrators to address complex societal challenges. However, the adoption of such transformative technologies necessitates a nuanced understanding of their implications for governance, ethical considerations, and societal impacts (Brynjolfsson & McAfee, 2017). The integration of technology in public administration is not merely a means to an end but a cornerstone for achieving sustainable development. Responsible technology integration aligns with the principles of equity, transparency, and accountability for ensuring the technological advancements (United Nations, 2019). As articulated in the United Nations Sustainable Development Goals (SDGs), technology plays a crucial role in fostering inclusive growth, reducing disparities, and building resilient institutions. Therefore, the adoption of AI in public services is central to advancing the global sustainability agenda. The scope of this paper is framed by the broader context of international efforts to harness technology for public good. The United Nations (UN) has been at the forefront of promoting the ethical and equitable application of AI through initiatives such as the UN AI for Good Global Summit and the United Nations Development Programme's (UNDP) focus on digital governance (UNDP, 2021). These initiatives underscore the importance of leveraging AI to achieve developmental objectives while mitigating potential risks. By situating the study within this global framework, the research underscores the significance of aligning local AI applications with international best practices and ethical standards.

The integration of AI into public administration has gained global attention for its potential to enhance efficiency, streamline administrative processes, and reduce redundancies. AI-driven automation promises to transform public sector operations by optimizing service delivery and eliminating backlogs. However, this rapid adoption poses significant risks, particularly due to insufficient regulatory oversight and limited understanding of its broader societal implications. This has sparked a global "AI regulation race," with nations scrambling to develop robust governance frameworks to manage AI's impact. In March 2024, the United Nations adopted Resolution A/RES/78/265, recognizing AI's dual potential to either support or undermine progress toward the SDGs. This was followed by Resolution A/RES/78/311, emphasizing the requirement for enhanced international cooperation in building capacity for AI governance. AI's governance has become central to

the UN’s broader discussions, including the global digital compact for the future initiative. At the national level, countries such as Canada, China, the European Union, South Korea, Singapore, and the United States are at the forefront of developing AI regulatory frameworks. These efforts aim to balance the benefits of AI-driven innovation with the need for ethical oversight, data protection, and public trust in digital governance (UN Department of Economic and Social Affairs (UNDESA), 2024).

**UNITED NATIONS PUBLICATIONS ON RESPONSIBLE TECHNOLOGY
INTEGRATION EFFORTS**

The United Nations has published several reports emphasizing the integration of technology into public administration to support sustainable development. The UNDESA report on E-Government Survey-2024, highlights the use of AI, big data, and blockchain to address global challenges such as inequality and climate change while improving governance and public service delivery (United Nations, 2024). Similarly, the *Digital Government in the Decade of Action for Sustainable Development-2020*, discusses leveraging digital technologies to advance the SDGs by fostering innovation, collaboration, and inclusivity (United Nations, 2020). Earlier, the 2016 report, *E-Government for Sustainable Development*, underscored the capability of e-government in enhancing transparency, accountability, and institutional capacity, critical for promoting good governance (United Nations, 2016). These publications collectively advocate for responsible technology integration to cope-up with the digital divides and ensuring equitable access to opportunities, thereby aligning digital transformation efforts with sustainable development objectives. Various reports published by the United Nations depict that the UN is consistently making efforts to incorporate emerging technologies into the governance process of its member countries, as illustrated in Table 1.

Table 1: Brief Overview of Key UN Reports on E-Government and Digital Transformation

Publication Year	Title of the Report	Brief Orientation
2024	Accelerating Digital Transformation for Sustainable Development	Focuses on leveraging digital technologies to achieve the Sustainable Development Goals (SDGs). Emphasizes on the role of AI, big data, and blockchain in enhancing public service delivery, improving governance, and addressing global challenges like inequality and climate change.

<i>Publication Year</i>	<i>Title of the Report</i>	<i>Brief Orientation</i>
2022	The Future of Digital Government	Explores the evolution of digital government in a post-pandemic world. Highlights the importance of resilience, inclusivity, and citizen-centric services in the digital age, emphasizing data governance and cybersecurity as critical pillars.
2020	Digital Government in the Decade of Action for Sustainable Development	Discusses the role of digital government in accelerating progress toward the SDGs by 2030. Focuses on the need for collaboration, innovation, and digital inclusion to manage the digital divide and equitable access to public services.
2018	Gearing E-Government to support transformation towards sustainable and resilient societies	Examines how e-government can foster sustainable development and resilience. Emphasizes the integration of digital technologies in disaster management, climate resilience, and economic recovery efforts.
2016	E-Government for Sustainable Development	Highlights the potential of e-government to advance the SDGs. Focuses on enhancing institutional capacity, transparency, and accountability through digital platforms to promote good governance and citizen engagement.
2014	E-Government for the Future We Want	Aligns e-government initiatives with the post-2015 development agenda. Advocates for inclusive, participatory, and transparent governance frameworks enabled by digital technologies.
2012	E-Government for the People	Centers on making e-government more citizen-centric. Emphasizes user-friendly digital services, increased accessibility, and the role of feedback mechanisms in improving public service delivery.
2010	Leveraging E-Government at a Time of Financial and Economic crisis	Analyzes how e-government can help governments respond to financial and economic crises. Focuses on cost-effective service delivery, enhanced efficiency, and innovative public-sector solutions.
2008	From E-Government to Connected Governance	Explores the transition from siloed e-government initiatives to integrated, connected governance models. Advocates for cross-agency collaboration and seamless service delivery.

<i>Publication Year</i>	<i>Title of the Report</i>	<i>Brief Orientation</i>
2005	From E-Government to E-Inclusion	Emphasizes the importance of e-inclusion to ensure all citizens benefit from digital governance. Focuses on bridging the digital divide and promoting equity in access to digital services.
2004	Towards Access for Opportunity	Highlights the capacity of e-government in providing equitable access to opportunities. Emphasizes using ICT to empower marginalized groups and foster socio-economic development.
2003	World Public Sector Report: E-Government at the Crossroads	Evaluates the progress and challenges of e-government initiatives globally. Discusses strategic choices for governments in expanding digital governance and improving public sector efficiency.
2001	Benchmarking E-Government: A Global Perspective	Provides a global benchmark of e-government development. Offers insights into best practices, emerging trends, and challenges in the adoption of e-government across different regions.

Source: Author’s compilation from UN E-Government Reports from 2001 to 2024.

As per the table-1 the United Nations’ key reports on e-government and digital transformation chronicle the evolving role of digital technologies in governance over two decades, with a focus on sustainable development, inclusivity, and resilience. The most recent reports, such as the 2024 publication, emphasize leveraging advanced technologies like AI, big data, and blockchain to meet the SDGs while addressing global challenges such as inequality and climate change. The 2022 report highlights the post-pandemic transition to citizen-centric digital government, underscoring resilience, inclusivity, and cybersecurity. Earlier reports, including the 2018 and 2020 publications, discuss the importance of collaboration, innovation, and digital inclusivity to bridge divides in alignment with the SDG timeline. Notable themes from earlier reports, such as the 2008 shift toward connected governance and the 2005 focus on e-inclusion, highlight the progression from siloed initiatives to integrated systems fostering equity. The foundational 2001 and 2003 reports laid the groundwork for benchmarking and strategic development in e-government. Across all reports, the UN consistently advocates for harnessing digital tools to enhance public service delivery, promote transparency, and empower marginalized groups.

LITERATURE REVIEW

Digital governance has emerged as a critical area of focus in global public administration, reflecting the increasing reliance on technology to deliver public services and manage resources. Governments worldwide are investing in digital transformation strategies to enhance service efficiency, foster transparency, and improve citizen engagement. According to OECD (2020), key global trends include the adoption of cloud computing, the rise of open government data initiatives, and the integration of AI and machine learning into administrative processes. However, the responsible use of these technologies remains a significant concern, requiring robust ethical frameworks and regulatory mechanisms for addressing the issues of data privacy, algorithmic bias, and cybersecurity risks (Floridi et al., 2018). Heeks (2006) argues that effective e-government initiatives not only transform service delivery but also strengthen democratic processes through enhanced transparency and citizen participation. AI governance, on the other hand, encompasses the policies and practices required to ensure the ethical and equitable use of AI technologies in public administration. Mittelstadt et al. (2016) highlight the importance of accountability, transparency, and inclusivity in AI governance frameworks. Digital inclusion is another critical concept, emphasizing the need to bridge the digital divide and ensure equitable access to technological resources. Van Dijk (2020) notes that digital inclusion is fundamental to achieving social equity and fostering sustainable development. Sustainability, as articulated in the UN SDGs, integrates economic, social, and environmental dimensions, underscoring the role of technology in promoting inclusive growth and resilience (United Nations, 2019). The United Nations has played a pivotal role in shaping global discourse on technology integration in public administration. Through initiatives such as the UN E-Government Survey and the AI for Good Global Summit, the organization has emphasized the need for ethical, inclusive, and sustainable technological adoption. Previous research highlights the UN's contributions to capacity building, policy formulation, and the promotion of best practices in digital governance (UNDP, 2021). For instance, the UNDP has supported numerous countries in developing e-government strategies and enhancing digital literacy, thereby fostering institutional resilience and citizen empowerment (UNDESA, 2018).

The United Nations has established a comprehensive policy framework to guide responsible technology integration, emphasizing ethical AI adoption, capacity-building, and international cooperation. Resolution A/RES/78/265 underscores AI's critical role in advancing the SDGs, highlighting its potential to optimize resource allocation, enhance public service delivery, and foster innovation (United Nations General Assembly, 2023). Complementing this, Resolution A/RES/78/311 advocates for global collaboration in AI capacity-building, particularly for developing nations, ensuring equitable access to AI advancements and minimizing technological

disparities (United Nations General Assembly, 2023). Further, the UN's Global Digital Compact and the Pact for the Future initiatives represent landmark efforts to foster an inclusive digital ecosystem. These initiatives prioritize digital inclusion, data privacy, and the ethical deployment of emerging technologies, providing a roadmap for member states to navigate digital transformation sustainably (United Nations, 2023). The 2024 report, "Accelerating Digital Transformation for Sustainable Development," elaborates on these goals, emphasizing actionable strategies to integrate AI responsibly into public administration while addressing potential ethical and societal challenges (United Nations, 2024).

The above literature underscores the transformative capacity of digital governance and responsible technology use in public administration. However, it also depicts the requirement of comprehensive frameworks to address ethical, social, and environmental challenges. The UN's efforts in promoting sustainable technology adoption provide valuable insights and benchmarks for local and national governments seeking to harness the benefits of digital transformation. The literature highlights the transformative aspects of digital governance and responsible technology use in public administration. However, it also highlights the need for comprehensive frameworks to address ethical, social, and environmental challenges. The UN's efforts in promoting sustainable technology adoption provide valuable insights and benchmarks for local and national governments seeking to harness the benefits of digital transformation.

UN INITIATIVES IN TECHNOLOGY INTEGRATION FOR SUSTAINABLE PUBLIC ADMINISTRATION

Advancing E-Government Platforms to Support SDGs

The United Nations has played a significant role in advancing e-government platforms to support the SDGs. Through initiatives like the UN E-Government Survey, the organization provides member states with benchmarks and best practices to enhance digital governance frameworks. These efforts aim to improve transparency, citizen engagement, and the delivery of citizen services. As an example, the UNDP's assistance in developing e-government portals in Africa and Asia has facilitated more accessible and inclusive governance structures (UNDESA, 2020).

Ethical AI Use, Data Governance, and Digital Inclusion

The UN's initiatives on ethical AI use focus on ensuring that AI technologies are deployed transparently, equitably, and responsibly. The guidelines for ethical AI deployment emphasize reducing biases, enhancing accountability, and promoting

inclusivity in public service applications. Additionally, data governance initiatives by the UN aim to strengthen member states' capacities to manage and protect digital data, fostering trust and resilience in digital systems (United Nations, 2022). Digital inclusion is another cornerstone of the UN's strategy, with programs designed to bridge the digital divide and ensure that marginalized populations benefit from technological advancements. The table-2 highlights about the United Nations efforts in integration of responsible technology in Public Administration functions.

Table 2: UN Efforts for Responsible Technology Integration in Public Administration

<i>Year</i>	<i>Objectives</i>	<i>Initiatives/ Programs</i>
2001 – Present	Monitor global progress in e-government development	UN E-Government Development Index (EGDI) – Tracks digital infrastructure, service delivery, and citizen engagement.
2001 – Present	Improve digital governance and public sector innovation	UNDESA Digital Government Programs – Capacity building, policy advice, and digital transformation best practices.
2003 & 2005	Promote inclusive and people-centered information societies	World Summit on the Information Society (WSIS) – Focus on digital inclusion, ethical tech use, and capacity building.
2008 – Present	Provide secure and responsible ICT infrastructure to the UN and member states	UN Office of Information and Communications Technology (OICT) – Builds digital tools with a focus on ethics and resilience.
2009 – Present	Leverage data and AI for sustainable development and public services	UN Global Pulse – Uses big data and AI with safeguards for privacy and ethics in governance and humanitarian work.
2015	Guide global digital development aligned with SDGs	UN Principles for Digital Development – Promote user-centered, secure, and inclusive digital design in public systems.
2018	Harness AI for social good, including governance	AI for Good Global Summit (ITU) – A multi-agency platform promoting ethical AI for improved public administration.
2021	Establish global ethical standards for AI use in governance and society	UNESCO's Recommendation on the Ethics of Artificial Intelligence – First global normative framework for responsible AI.
2021	Foster digital transformation for inclusive governance	UNDP Digital Strategy (2022–2025) – Supports governments with digital-by-default, regulation, and ecosystem building.
2022	Strengthen innovation and tech capacity in developing countries	UN Commission on Science and Technology for Development (CSTD) – Policy support for ethical and sustainable tech adoption.

Source: Author's compilation from UN Organizations Reports from 2001 and continue.

The table-2 describes that the United Nations has undertaken a series of initiatives to promote responsible technology integration in public administration. Since 2001, the **UN E-Government Development Index (EGDI)** has monitored global progress in digital infrastructure, service delivery, and citizen engagement.

Alongside this, the **UNDESA Digital Government Programs** have supported countries through capacity building, policy guidance, and promotion of best practices in digital governance. The **World Summit on the Information Society (WSIS)**, held in 2003 and 2005, emphasized creating inclusive, people-centered information societies through digital inclusion and ethical use of technology. From 2008 onwards, the **UN Office of Information and Communications Technology (OICT)** has been building secure and ethical ICT infrastructure for the UN and member states. The **UN Global Pulse**, launched in 2009, harnesses big data and AI for sustainable development and public services while ensuring privacy and ethical standards. In 2015, the **UN Principles for Digital Development** were introduced to guide global digital efforts in alignment with the SDGs, advocating for secure, user-centric, and inclusive digital systems. The **AI for Good Global Summit**, initiated in 2018 by the ITU, promotes the use of ethical AI to enhance governance and public service delivery. In 2021, **UNESCO** introduced the **Recommendation on the Ethics of Artificial Intelligence**, the first global framework to guide responsible AI deployment. The same year, **UNDP's Digital Strategy (2022–2025)** was launched to assist governments in implementing inclusive digital transformation. Most recently, in 2022, the **UN Commission on Science and Technology for Development (CSTD)** began offering policy support to help developing countries adopt technology in an ethical and sustainable manner. These collective efforts reflect the UN's commitment to fostering innovation while upholding ethical, inclusive, and sustainable digital governance worldwide.

SUSTAINABLE DEVELOPMENT GOALS AND TECHNOLOGY INTEGRATION

Supporting Specific SDGs with Responsible Technology Use

The integration of technology plays a pivotal role in achieving various Sustainable Development Goals. For instance, SDG 16, which focuses on Peace, Justice, and Strong Institutions, benefits significantly from responsible technology use. Digital platforms enhance transparency in governance, reduce corruption through automated systems, and improve access to justice via online legal aid services (United Nations, 2020). Similarly, AI-driven data analysis supports SDG 13 on Climate Action by enabling better monitoring and prediction of environmental changes, optimizing resource usage, and fostering resilience against climate-related challenges (UNEP, 2021).

Technology-Driven Public Administration and Sustainability

Technology-driven public administration fosters sustainability by streamlining resource allocation, enhancing service delivery, and reducing environmental

footprints. Digital transformation initiatives, such as e-governance and AI integration, contribute to sustainable urban development (SDG 11) by optimizing public transport, waste management, and energy systems (OECD, 2020). Furthermore, blockchain technology ensures sustainable supply chain management by providing transparency and traceability, aligning with SDG 12 on Responsible Consumption and Production (World Economic Forum, 2021).

Promoting Transparency, Accountability, and Resilience

Technology is instrumental in promoting transparency, accountability, and resilience in public administration. Open government data initiatives empower citizens with access to information, enhancing trust and participation in governance (Heeks, 2006). AI and machine learning models

CHALLENGES IN IMPLEMENTING RESPONSIBLE TECHNOLOGY INTEGRATION

Ethical Issues: AI Bias, Data Privacy, and Algorithmic Accountability

The implementation of responsible technology integration faces significant ethical challenges. AI systems are often criticized for perpetuating biases present in training data, leading to discriminatory outcomes in public service delivery (Noble, 2018). Data privacy concerns also arise as governments increasingly rely on digital platforms to collect and process sensitive citizen information. Ensuring algorithmic accountability is another critical issue, as opaque AI models can lead to decisions that are difficult to explain or contest, undermining public trust in technology-driven governance (Mittelstadt et al., 2016).

Digital Divide and Inequities in Access to Technological Resources

The digital divide remains a significant barrier to the equitable adoption of technology in public administration. Disparities in access to digital infrastructure, such as internet connectivity and affordable devices, exacerbate social and economic inequalities, particularly in developing countries (Van Dijk, 2020). Addressing these inequities is essential to ensuring that all citizens can benefit from technological advancements, aligning with the principles of digital inclusion and social justice.

Regulatory and Institutional Challenges in Global Technology Governance

The rapid pace of technological innovation often outstrips the ability of regulatory frameworks to adapt, creating gaps in governance that can be exploited. International cooperation is essential to establish harmonized standards and

regulations for emerging technologies, such as AI and blockchain, but achieving consensus among diverse stakeholders remains challenging (Floridi et al., 2018). Institutional capacity-building is also crucial to enable governments, particularly in low-resource settings, to effectively manage and regulate technology integration in public administration.

UN's Role in Capacity-Building and International Cooperation

The United Nations has been instrumental in providing technical assistance and training programs aimed at building digital capacity in developing nations. Through initiatives such as the **Digital Transformation Framework for Developing Countries**, the UN offers tailored support to governments seeking to modernize public administration and improve service delivery. These programs often include training in AI literacy, digital skills, and cybersecurity, empowering public officials to leverage emerging technologies effectively. The **United Nations Institute for Training and Research (UNITAR)** plays a pivotal role in this endeavor, offering workshops and online courses on topics such as e-governance and data-driven decision-making (UNITAR, 2022).

The UN fosters multi-stakeholder partnerships to amplify its capacity-building efforts. Collaborations with international organizations, such as the World Bank and the International Telecommunication Union (ITU), ensure a comprehensive approach to digital transformation. These partnerships facilitate knowledge-sharing, resource mobilization, and the development of interoperable technology standards. Additionally, the UN engages with the private sector to harness innovation and expertise in areas such as cloud computing, AI development, and blockchain technology. Civil society organizations are also key partners, ensuring that technology integration efforts are inclusive and aligned with community needs (United Nations, 2023).

Regular evaluations conducted by the UN ensure that these initiatives are meeting their objectives. Metrics such as citizen satisfaction, service efficiency, and inclusivity are used to assess the outcomes of capacity-building programs, providing insights for continuous improvement. By prioritizing technical assistance, fostering international cooperation, and rigorously evaluating outcomes, the UN has significantly advanced the digital transformation of public administration, contributing to global development goals.

Suggestions for Strengthening UN Efforts

The following suggestions may be considered for enhancing the global regulatory framework for responsible technology integration, improvement in coordination

between UN agencies, member states, and stakeholders, expanding digital inclusion and promoting ethical governance:

- **Develop Comprehensive Guidelines:** The UN should spearhead the creation of global guidelines that encompass ethical standards for the design, deployment, and utilization of emerging technologies. These guidelines should be adaptable to different cultural and political contexts while ensuring universal human rights principles are upheld.
- **Establish a Global Technology Governance Body:** A dedicated body within the UN could be established to oversee technology integration and its implications. This body would be responsible for monitoring compliance with international standards and addressing grievances related to technology misuse.
- **Promote Multi-Stakeholder Engagement:** Encourage collaboration among governments, civil society, academia, and the private sector in formulating regulatory policies. This could be achieved through inclusive dialogues and forums that foster trust and shared understanding of the technological landscape.
- **Implement Impact Assessments:** Mandate regular assessments of the societal and environmental impacts of new technologies before their widespread adoption. This should include mechanisms for public consultation to gather diverse perspectives.
- **Enhance Inter-Agency Collaboration:** Foster improved communication and collaboration among UN agencies involved in technology governance, such as UNDP, UNESCO, and ITU. This can be achieved through joint initiatives, shared platforms, and integrated reporting mechanisms.
- **Create a Centralized Knowledge Hub:** Develop an online platform that consolidates resources, best practices, and research related to responsible technology use. This hub would serve as a reference point for member states and stakeholders seeking guidance on policy formulation and implementation.
- **Establish Clear Communication Channels:** Designate focal points within each UN agency and member state to facilitate ongoing communication about technology-related initiatives and challenges. This would ensure a coherent and unified approach to policy-making.
- **Conduct Regular Capacity-Building Workshops:** Organize workshops and training sessions for member states to enhance their capacity to navigate technology integration challenges. This should cover areas such as digital governance, regulatory frameworks, and ethical standards.
- **Promote Universal Access to Technology:** The UN should advocate for initiatives that ensure equitable access to technology, particularly in

underprivileged regions. This could involve partnerships with technology firms to provide affordable internet and digital literacy programs.

- **Support Policies for Digital Literacy:** Member states should be encouraged to develop national strategies that prioritize digital literacy for ensuring citizens skill development to participate fully in the digital economy and society.
- **Encourage Ethical Technology Development:** Advocate for the adoption of ethical frameworks within tech companies that prioritize user privacy, data protection, and non-discrimination. The UN could collaborate with industry leaders to develop a code of conduct for responsible technology development.
- **Foster Inclusive Policy-Making:** Ensure that marginalized and underrepresented groups have a voice in technology policy discussions. This can be achieved through stakeholder consultations and by integrating gender, race, and socio-economic perspectives into technology governance frameworks.
- **Implement Monitoring and Accountability Mechanisms:** Establish robust mechanisms for monitoring the implementation of technology policies and holding stakeholders accountable for their actions. This should include transparent reporting processes and avenues for civil society to raise concerns.

CONCLUSION

In conclusion, incorporating technology into societal systems holds significant promise for boosting economic development, enhancing the delivery of public services, and fostering social inclusion. However, it also brings significant challenges, including ethical concerns, privacy risks, and the potential to exacerbate inequalities. A cohesive global regulatory framework, underpinned by multi-stakeholder engagement and a commitment to digital inclusion, is vital to ensure that technological advancements align with sustainable development goals and human rights principles. The United Nations stands at the forefront of these efforts, leveraging its leadership in setting global standards, facilitating international dialogues, and fostering partnerships. By tackling enduring challenges such as fragmented initiatives, swift technological progress, and the need to balance innovation with regulation, the UN can maintain its crucial role in guiding a future where technology empowers communities, narrows disparities, and advances the goals of a more just and sustainable world. Acknowledgement: The earlier version of the paper was presented at International Conference on SDGs for a better world: Role of Public Administration, organized by Department of Public Administration, MANUU, Hyderabad on 21-22 January 2025.

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ROLE OF PUBLIC ADMINISTRATION IN COMBATING GENDER INEQUALITY: ADDRESSING RAPE AS BARRIER TO SUSTAINABLE DEVELOPMENT GOALS

Shefalica Singh*

Abstract

The Sustainable Development Goals aim to reduce all forms of violence, and propose that government and communities find lasting solutions to insecurity and conflict. Effective governance is the pre-condition to achieve sustainable development goals. Achieving gender equality in its varied dimensions is consequential to achieve the goals of sustainable development. However, invariably when we look at the very basic dimension of gender equality related to violence and crime against women, we are compelled to rethink and revisit on the governance structures, policies and practices that are in place to support the SDG's. Further, this raises concerns about the effectivity of the existing governance structures and the validity of their concomitant integral role in steering sustainable development toward ending inequality and ensuring justice. In the light of the aforementioned argument, the paper tries to address the state's drawbacks in combating the ever-growing cases of rape in the country that spike the elements of equity and inclusion. It also looks into the question that how does a crime like rape impede the sustainable development goals of gender-equality. The study of cases indicate towards – first, perpetuation of gender inequality and second, state apparatus weak on checking such crimes.

Keywords: SDG5, Governance, Gender, Sexual Violence, Equity, Inclusion.

INTRODUCTION

Sustainable Development Goal (SDG 5) is a United Nations goal to achieve gender equality and empower all women and girls. Gender equality is not only a fundamental human right, but a necessary foundation for a peaceful, prosperous

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and sustainable world. There has been progress over the last decades, but the world is not on track to achieve gender equality by 2030 (United Nations, 2015).

Women and girls represent half of the world's population and therefore half of its potential. But gender inequality persists everywhere and stagnates social progress (United Nations, 2021). Rape as a form of sexual violence often reflects a state's failure to uphold its responsibility to protect citizens from gender discrimination.

Sexual violence and exploitation in the form of rape, discrimination in public offices, all remain huge barriers. Regardless of where you live in, gender equality is a fundamental human right. Advancing gender equality is critical to all areas of a healthy society. Political leadership, investments and comprehensive policy reforms are needed to dismantle systemic barriers to achieving Goal 5. Gender equality is a cross-cutting objective and must be a key focus of national policies, budgets and institutions.

Rape exposes the systemic failures of public administration in fostering a safe and equitable society, making it clear that without strong, inclusive governance, SDG goals remain unattainable.

RAPE AS AN IMPEDIMENT TO GENDER EQUALITY AND INCLUSION: BARRIER TO ACHIEVING SDG 5

Rape is a severe human rights violation and a form of gender-based violence that significantly impedes the achievement of Sustainable Development Goal (SDG) 5: Gender Equality and broader goals related to inclusion. It disrupts progress toward achieving the objectives of SDG 5 in number of ways. First, rape is both a symptom and tool of gender inequality. It reinforces patriarchal norms that devalue women and girls, perpetuating cycles of discrimination and subordination. Survivors of rape often face stigma and victim-blaming which can silence them and discourage others from speaking. It perpetuates gender inequality in terms of power imbalance as it is often rooted in unequal power dynamics between genders, reinforcing the systemic subjugation of women and marginalized groups. It leads to a cycle of discrimination and oppression. It furthermore normalizes violence if rape is poorly addressed in societies leading to embedding gender-based violence as a societal norm rather than a violation of rights.

Second, it has dire psychological and social impact on survivors like trauma, social stigma and social isolation. Survivors often face lifelong psychological consequences, including PTSD, depression, and anxiety, which can hinder their ability to fully participate in society and economic activities. Many survivors face ostracism, victim-blaming and social exclusion, discouraging them from seeking justice or reintegrating into their communities.

Third, it is a huge barrier to education and employment as it leads to higher drop out rates due to trauma, stigma, or unintended pregnancies resulting from sexual violence. The lack of education reduces the future employment opportunities for young girls and women leading to cycles of poverty. It is a major barrier to achieving gender equality.

Fourth, it undermines women's political and social mobility as fear of violence including rape restricts their mobility and participation in public life, limiting their ability to engage in leadership roles of decision-making processes. If women's safety and dignity are not protected, they are less likely to feel included in societies.

Fifth, it has health consequences as rape often leads to severe physical and reproductive health issues, including sexually transmitted infections, injuries (STIs), injuries and unsafe abortions. These health challenges can limit survivors' ability to participate fully in societal activities. Lack of access to health services for rape survivors exacerbates gender inequalities, as it denies them the support needed to recover and rebuild their lives.

Sixth, it impacts broader development goals as it has a ripple effect on other SDG's such as SDG 3, which talks about Good Health and Well-Being, by increasing health burdens. SDG 4, which is about quality education by limiting access for survivors. SDG 8, which is about Decent Work and Economic Growth, by reducing women's economic participation.

ADMINISTRATION POOR AT COMBATING RAPE AS A CRIME: A MAJOR DETERRENCE IN TIMELY FULFILMENT OF SDG'S

Rape highlights the failure of public administration in meeting the Sustainable Development Goals (SDG's), particularly SDG 5: Gender Equality and SDG 10: Reduced Inequalities, by exposing systemic gaps in governance, justice, and societal protection mechanisms. It could be discerned in the following ways:

Failure in Preventing Gender-Based Violence

- **Inadequate Legal Framework:** Weak or poorly enforced laws against sexual violence show the failure of public administration to prioritize women's right and safety perpetuating a culture of impunity for perpetrators.
- **Insufficient Preventive Measures:** Public institutions often fail to implement effective policies, such as education programs to challenge gender norms.

Ineffective Law Enforcement and Justice Systems

- **Low Conviction Rates:** In many cases, the justice system is inaccessible, biased or corrupt, leading to low reporting and conviction rates for rape.

- **Re-victimization of Survivors:** Survivors often face insensitive treatment, victim blaming, and bureaucratic hurdles when seeking justice, deterring others from coming forward.
- **Delayed justice:** Lengthy legal processes reveal inefficiencies in public administration, denying survivors timely redress and reinforcing societal mistrust in institutions.

Failure to Provide Essential Services

- **Lack of Support for Survivors:** Public Administration often fails to provide critical services like trauma counselling, medical care, legal aid, and safe housing for survivors, leaving them vulnerable to further harm.
- **Limited Access to Education and Employment:** Survivors often lose access to education or work due to stigma, pregnancy, or trauma, which public systems fail to address adequately.

Gender-Insensitive Governance

- **Underrepresentation of Women in Decision-Making:** Public Administration system often lack gender-balanced leadership, leading to the neglect of gender-sensitive policies and the perpetuation of patriarchal structures.
- **Failure to Enforce Anti-Discrimination Policies:** Public Institutions frequently fail to protect women from workplace discrimination and harassment, compounding societal inequalities.

Lack of Awareness and Cultural Change

- **Inadequate Public Education Campaigns:** Failure to challenge harmful societal norms and educate communities about gender equality reflects the public administration's inability to promote inclusion effectively.
- **Tolerance of Rape Culture:** Public administration often overlooks the societal normalization of rape, failing to address its root causes through awareness campaigns, policy reforms, or community engagement.

Weak Accountability and Monitoring Mechanisms

- **Failure to Monitor Gender-Based Violence:** Public institutions often lack comprehensive data collection and analysis systems to track and address sexual violence effectively.

- **Limited Accountability:** Absence of mechanisms to hold law enforcement, judiciary, and policymakers accountable for mishandling rape cases exposes administrative weaknesses.

Broader Implications for SDG's

- **Eroding Trust in Public Institutions:** Failures in addressing rape reduce public confidence in governance and impede collective efforts to achieve the SDG's.
- **Undermining Social Inclusion:** Survivors, particularly from marginalized groups, often face double discrimination, based on gender and social identity, revealing the inability of public administration to create, inclusive, equitable systems.

MITIGATING RAPE CASES: THE INDIAN SCENARIO

Questioning the frequency of, and growing rape cases in India, it is important to take a look at several cases that not only created stir across the country, but will also impress upon how the laws that exist, and their enforcement, is all too often found lacking, with even basic safety requirements not being met. They lay bare how unsafe the country can be for women, and women's safety is still an issue that continues to haunt the country. It also questions the very existence and validity of the laws in place that are meant to protect women from heinous crimes.

A few infamous rape cases as discussed below will help for a better understanding of the institutional failures and the loopholes that exist in the system.

- Priyadarshini Mattoo Case
- Nirbhaya Case
- Unnao Rape Case
- The Hyderabad Rape Case
- Kolkata Rape Case

The Priyadarshini Mattoo case, rape and murder of a young law student in Delhi in 1996, is a stark illustration of how the oppression and marginalization of women in society. This case not only highlighted the vulnerability of women in the face of male aggression but also underscored the systemic failures that allow such violence to go unpunished. The power dynamics in this case were glaring reflecting on power, influence, impunity and a sense of entitlement that marginalize women and diminish their rights. This case laid bare the deep-seated biases within the Indian legal and law enforcement systems, and the failure of the system to conduct fair investigation. The failure of the justice system is a clear reflection of how institutional structures often protect the powerful while failing the vulnerable. Women, particularly those who do not have the backing of influential families or

social standing, are often marginalized within these systems. The long struggle for justice in this case reflected the broader fight against the marginalization and oppression of women in India.

The 2012 Nirbhaya rape case in Delhi marked a turning point in the discourse around sexual violence in India. The brutal assault on a young woman by a group of men on a moving bus not only shocked the nation but also exposed the deeply entrenched patriarchal framework that perpetuates such violence. The sheer brutality of the Nirbhaya case was a manifestation of patriarchal exploitation where the male perpetrators sought to assert their dominance and control over the female victim. In a patriarchal society, women are often viewed as subordinate to men, and their bodies are seen as objects to be controlled, violated or punished. The gangrape and subsequent torture of Nirbhaya were extreme expressions of this mindset, where the perpetrators believed they had the right to violate a woman's autonomy because they perceived her as weak and inferior. The fact that a woman was out in public at night was seen by the assailants as a challenge to the patriarchal norms that dictate how women should behave.

This case exposed the failures of institutions that operate within a patriarchal framework. The initial response by law enforcement and the legal system was slow and inadequate, reflecting a broader pattern of institutional apathy towards sexual violence. The police force, which is often seen as a reflection of societal attitudes, was criticized for its insensitivity and lack of urgency in handling the case. Furthermore, the legal proceedings that followed were marked by delays, and the defence arguments often relied on patriarchal stereotypes about women's role and behaviours. This highlighted the need for systemic reforms in how cases of sexual violence are handled, ensuring that the justice system does not perpetuate the very norms that allow such violence to occur.

The Unnao rape case, which came to light in 2017, is a harrowing example of how women in India are systematically excluded and marginalized, particularly when they seek justice for sexual violence. This case is emblematic of how women, especially those from less privileged backgrounds are marginalized and silenced when their assailants hold positions of power. In patriarchal societies, men in power often use their influence to suppress accusations of sexual violence, relying on a network of corrupt officials, police, and other actors to maintain their control. The victim in the Unnao case was not just a target of sexual violence; she was also a victim of a system designed to protect powerful men at the expense of marginalized women. The initial response of the police and local authorities to the Unnao rape case was marked by negligence, apathy, and outright complicity. Despite the victim and her family's repeated attempts to seek justice, the authorities did little to investigate the allegations against the culprit. Instead, they actively participated in efforts to silence the victim. Her father was falsely implicated in a case and subsequently died

in police custody after being brutally beaten. This blatant abuse of power highlights the systemic marginalization of women within legal and institutional frameworks. The justice system, which should protect the rights of all citizens, often fails women, particularly when their assailants are influential men.

The Hyderabad rape case of 2022, where a young woman was brutally raped and murdered by a group of men, serves as a grim reminder of how women continue to occupy a peripheral position in Indian society. In this case much of the media coverage and societal discussions centred around sensationalizing the crime rather than addressing the deeper issues of women's safety and autonomy. This reflects how women's issues often remain at the periphery of societal concern, only coming to the fore in moments of extreme violence but quickly receding into the background thereafter. While the perpetrators were swiftly arrested and later encountered police action, which resulted in their deaths in a controversial police encounter, the underlying issues that perpetuate violence against women remain largely unaddressed. The swiftness of the legal and extra-judicial actions in this case, while bringing a sense of immediate retribution, did little to challenge the systemic marginalization that puts women at risk in the first place. The focus on punitive measures, without a corresponding emphasis on preventive actions and systemic change, keeps women's safety concerns at the periphery. The cycle of marginalization continues as society fails to tackle the root causes of such violence-patriarchal norms, gender inequality, and the lack of adequate protective measures for women.

In Kolkata, a city known for its rich cultural heritage and intellectual legacy, this incident revealed the stark contrast between the progressive ideals the city prides itself on and the grim realities that many women face. The attack was not just an act of sexual violence. It was an assertion of power and control, aimed at reinforcing the societal structures that keep women in a state of perpetual vulnerability ensuring they remain on the margins.

Kolkata case reflects on the loopholes in the system marred by negligence, reflecting a broader pattern of institutional failure to address sexual violence effectively.

Institutions, including the legal system, law enforcement, and social services, play a crucial role in either perpetuating or combating the marginalization of women. In many cases, these institutions have failed to protect women from violence, often due to systemic biases that prioritize the protection of the powerful over the vulnerable.

PATRIARCHAL NORMS, INSTITUTIONAL FAILURES AND DELAYED JUSTICE: A SLOWDOWN FOR SDG GOAL 5 TARGETS

Without dismantling patriarchal norms and ensuring timely justice, SDG 5's vision of gender equality will remain an unattainable goal:

Target 5.1 which stands for 'Ending Discrimination', gets impacted by Legal and Societal discrimination rooted in patriarchy. Such discrimination continues to marginalize women, impeding progress toward equality.

Target 5.2, aims at 'Eliminating Violence Against Women'. However, patriarchal norms normalize violence, and the justice delays fail to deter future crimes, making it difficult to eliminate violence against women.

Target 5.5, "Ensures Women's Participation", but the fear of violence and lack of justice discourage women from participating fully in public and private life.

Rape is often trivialized in patriarchal societies, with societal norms placing greater value on a woman's chastity than her autonomy. This reinforces harmful gender stereotypes and undermines efforts to promote gender equality. Women who report rape are often shamed. This discourages many from coming forward, silencing victims and perpetuating gender-based violence. Regarding the justice system, the Indian judiciary faces significant backlogs, with rape cases often taking years to resolve. The delay contributes to low conviction rates, emboldening the perpetrators and sending a message of impunity, undermining efforts to end violence against women. Furthermore, when police and legal systems are influenced by patriarchal biases, it leads to improper investigations or dismissive attitudes toward victims.

SUGGESTIONS FOR STRENGTHENING PUBLIC ADMINISTRATION IN COMBATING RAPE AND ADVANCING SDG 5

To effectively address rape as a barrier to sustainable development and gender equality, public administration must undertake comprehensive reforms pertaining to following mechanisms:

LAW ENFORCEMENT AND LEGAL FRAMEWORKS MUST BE STRENGTHENED

Unless there is a stricter Implementation of laws, the gaps in addressing sexual violence cannot be properly eliminated. Stronger penalties should be imposed to deter offenders.

Dedicated fast-track courts must be established to ensure timely justice for survivors and prevent case backlogs.

It is very important that survivors receive dignity, respect, and sensitivity in legal proceedings. So, there has to be a victim-centric approach.

A STRONG SURVIVOR SUPPORT SYSTEM

Governments should made efforts in the direction of establishing integrated support centres offering medical aid, psychological counselling, legal assistance, and rehabilitation programs for survivors.

There should be provision of government-run shelters to provide temporary shelter for survivors facing threats or societal rejection.

Educational avenues, and employment incentives for rape survivors should be ensured by the government to help rebuild their lives.

REFORMS IN PUBLIC INSTITUTIONS FOR A GENDER-SENSITIVE GOVERNANCE

There should be a mandatory gender-sensitivity training for public officials to address unconscious biases and discriminatory attitudes.

Gender-sensitivity in policymaking can be increased by increasing female representation in governance

Strict disciplinary action should be taken against public officials for negligence in handling rape cases and law enforcement.

CONFRONTING SOCIAL AND CULTURAL NORMS THAT LEAD TO AND NORMALIZE GENDER-BASED VIOLENCE

Necessity for equality in gender education must be incorporated into school curricula from an early age to challenge biased attitudes.

Rape survivors should not be stigmatized and this should be encouraged through awareness campaigns. Public awareness campaigns should aim at encouraging people to report cases of rape without fear to challenge rape culture.

Ensuring Involvement of Community Leaders and Religious Institution by Public administration to challenge harmful gender norms and gather local support against sexual violence.

ENSURING DATA-DRIVEN POLICY INTERVENTIONS AND MONITORING MECHANISMS

Governments must establish national databases to track rape cases, monitor legal outcomes, and assess the effectiveness of policy interventions. Conducting

independent gender audits of public administration policies at regular intervals to measure their impact on alleviating sexual violence against women. Also, learning from successful international anti-rape policies in other countries and adapting them to local contexts can be helpful.

CONCLUSION

Rape is not just a criminal offense but it is also a symptom of deep-etched gender inequality that obstructs the realization and fulfilment of Sustainable Development Goal 5 (SDG 5) and broader development goals. The failure of public administration to prevent and address rape cases reflects a systemic weakness in governance, law enforcement, and societal structures. As discussed through the cases such as the Nirbhaya rape case, Unnao rape case, or Hyderabad incidents, the existing loopholes in the justice system are exposed.

If Public administration fails to play a proactive role in eliminating rape and gender-based violence, and falls short on ensuring strong legal frameworks, and adequate law enforcement, or introducing a cultural shift toward gender equality, its commitment to gender equality under the United Nations Sustainable Development Goals (SDGs) will remain an unfulfilled promise. Consequently, it should be the prime target of public administration to build a society free from rape and sexual violence which is essential for ensuring and achieving the target that the sustainable development goal holds.

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ACHIEVING SDGS THROUGH UNIVERSAL HEALTH COVERAGE IN INDIA: A CASE STUDY OF JHARKHAND

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Abstract

SDG 3 focuses on ensuring healthy lives and promoting well-being for all ages. It covers key health priorities, including reproductive, and adolescent health; communicable and non-communicable diseases; universal health coverage; and access to safe, effective, quality, and affordable medicines and vaccines for everyone. In India, Universal Health Coverage (UHC) represents a vital policy goal for India, aiming to provide accessible and affordable healthcare to all citizens. This paper examines the feasibility of UHC in Jharkhand, a state with substantial rural and tribal populations facing unique health system barriers. Through an analysis of health indicators, socio-economic disparities, and healthcare infrastructure, this article underlines the key obstacles such as inadequate facilities, workforce shortages, and high out-of-pocket expenses. Despite these challenges, national programs like Ayushman Bharat present opportunities for improving access and equity in healthcare. The paper suggests the need for targeted interventions, such as enhancing primary healthcare services, expanding health insurance, and utilizing digital health solutions. While substantial barriers exist, Jharkhand's experience offers valuable insights into broader strategies and lessons for achieving UHC across India. Ultimately, this article calls for a comprehensive, region-specific approach to overcome healthcare access issues and ensure equitable health coverage.

Keywords: Universal Health Coverage, Jharkhand, Healthcare Infrastructure, Disparities, Health Policy, Ayushman Bharat, Digital Health.

INTRODUCTION

India, home to over 1.4 billion people, is one of the world's fastest-growing economies. However, when it comes to healthcare, the country faces significant

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challenges that continue to undermine the well-being of its citizens. Despite progress over the last few decades, India's healthcare system remains deeply inequitable and inadequate to meet the needs of its diverse population. Access to healthcare is limited by a shortage of healthcare infrastructure, high out-of-pocket expenses, a lack of trained professionals in rural areas, and growing health disparities between urban and rural regions. India's health sector faces challenges like inadequate healthcare access, high disease burden, unequal services, limited resources, and gaps in maternal, child, and universal health coverage, hindering progress toward achieving Sustainable Development Goal 3.

India's healthcare challenges are further compounded by the increasing burden of both communicable and non-communicable diseases, aging populations, and rising healthcare costs. With over 62% of healthcare expenditures being borne directly by patients through out-of-pocket payments, the vast majority of the population faces financial barriers to accessing even basic medical care (Sriram and Albadrani 2022). Against this backdrop, the idea of achieving Universal Health Coverage (UHC) – a system where everyone has access to necessary healthcare services without suffering financial hardship – has gained significant political and social traction.

But is India ready for UHC? Despite significant efforts like the Ayushman Bharat scheme, which aims to provide health insurance to over 500 million vulnerable families, numerous hurdles remain in the path to a truly universal system (Sivarchaka and Mamgain 2024). This article explores the current state of Indian healthcare, explores the feasibility of UHC in India with a specific focus on Jharkhand's health landscape.

OVERVIEW OF INDIA'S HEALTHCARE SYSTEM

India's healthcare system is a mix of public and private providers. The public sector is tasked with providing health services to all citizens, especially in rural and underserved areas, while the private sector caters largely to urban and wealthier populations. However, the public system is significantly underfunded, under-resourced, and plagued by inefficiencies. India's public healthcare system is governed at both the central and state levels. While the central government provides the framework for health policy and funding, the delivery of healthcare services is managed by individual state governments. The result is a healthcare system that varies greatly in terms of quality, accessibility, and availability of services between states. Despite efforts to improve healthcare delivery, the public sector faces significant challenges.

India spends only 1.28% of its GDP on healthcare, among the lowest in the world (Ghosh, 2019). This is far below the 6-7% recommended by the World Health

Organization (WHO). Though, the budget estimates of the Department of Health and Family Welfare have reached from Rs 86,175 crore in 2023-24 from Rs 36,948 crore in 2014-15, thereby showing an overall increase of 133.23 per cent during the period (The Economic Time 2024). Public hospitals and healthcare centres, especially in rural areas, are often overcrowded, under-equipped, and lack trained healthcare professionals. According to WHO, India has only 1.1 doctors per 1,000 people, significantly lower than the global average of 1.5 (Pal and Kumar (2018). Bureaucratic inefficiencies, corruption, and poor management further undermine the effectiveness of public healthcare.

The private healthcare sector in India has grown rapidly over the past few decades, and about 70% of India's rural residents receive medical care from the private sector, while 80% of the country's urban residents do the same (Kant et al 2023). However, the private sector is costly and primarily serves the wealthier sections of society, exacerbating inequalities in access to care. The high cost of private healthcare makes it unaffordable for the majority of the population. For example, hospitalization and medical treatments can drain savings and push many families into poverty. While the private sector offers advanced medical technology and specialized care, quality can be uneven, with significant variations in service standards even within the private sector itself.

NEED FOR UNIVERSAL HEALTH COVERAGE (UHC) IN INDIA

Universal Health Coverage is a critical goal for India, where large portions of the population lack access to affordable and quality healthcare. UHC aims to ensure that everyone has access to necessary health services without experiencing financial hardship due to medical expenses. Several factors make the case for UHC particularly strong in India:

High Out-of-Pocket Expenditure

India has one of the highest levels of out-of-pocket expenditure (OOPE) in the world. According to the World Bank, OOPE in India accounts for over 62% of total health expenditure (Kumar and Rakesh 2021). This is a major barrier to accessing healthcare, particularly for low-income households. With limited public health insurance coverage and a large informal workforce, the burden of medical costs often forces families into debt or impoverishment. Efforts like the Ayushman Bharat scheme, which aims to cover 500 million vulnerable families with health insurance, are a step in the right direction. However, the reach and implementation of such programs remain limited, with challenges in delivering services efficiently to the poorest and most marginalized communities.

Growing Burden of Diseases

India is experiencing a dual burden of disease — the persistence of infectious diseases (such as tuberculosis and malaria) alongside the rise of non-communicable diseases (NCDs) like diabetes, hypertension, and cancer. The increasing prevalence of NCDs is placing additional strain on the healthcare system. In 2019, NCDs were responsible for 63% of all deaths in India, according to the WHO (Krugman 2024). With both types of diseases requiring long-term care and treatment, the need for a comprehensive, integrated health system becomes even more critical. UHC could help streamline care, prevent disease, and reduce the financial burden on individuals.

Healthcare Inequality

Access to healthcare in India is deeply unequal, with rural areas being particularly underserved. Approximately 70% of India's population lives in rural areas, yet these areas face severe shortages in healthcare infrastructure and professionals (Yadav 2017). The gap in healthcare access between urban and rural India is a significant obstacle to UHC. Even though urban areas have more hospitals, healthcare providers, and specialists, rural areas remain underserved due to logistical and resource limitations. UHC could reduce these disparities by ensuring that health services are accessible to all, particularly the rural and economically disadvantaged populations who are often excluded from the formal healthcare system.

UNIVERSAL HEALTH COVERAGE AND ITS FEASIBILITY IN JHARKHAND

Universal Health Coverage (UHC) aims to ensure that all people can access the health services they need without facing financial hardship. In India, UHC is a pressing need due to the vast disparities in healthcare access, particularly in underserved states like Jharkhand. This paper explores the case for UHC in India, with a focus on Jharkhand as a representative case study. Jharkhand, one of India's economically backward states, faces unique challenges in healthcare delivery due to its socio-economic conditions, inadequate infrastructure, and resource constraints. Jharkhand as a case study, it examines the state's health system, socio-economic factors, and policy interventions, the paper assesses the feasibility of UHC in the Jharkhand and identifies pathways to improve health outcomes for its population.

JHARKHAND'S HEALTH INDICATORS AND SYSTEMIC CHALLENGES

Jharkhand is the fourteenth most populous state in India and home to 33 million people, 13 million of who are poor (World Bank Group (2024)). The state has a large

rural and tribal population, which faces barriers to healthcare access due to poor infrastructure, low literacy, and cultural factors.

HEALTH INDICATORS IN JHARKHAND

According to the National Family Health Survey (NFHS-5) and other official health data, Jharkhand has poor health indicators compared to national averages. Key health indicators for Jharkhand are as follows:

Table 1: Key Health Indicators in Jharkhand and India

Indicator	Jharkhand	India (National Average)
Maternal Mortality Ratio (MMR)	5.6/100,000	7.3/100,000
Infant Mortality Rate (IMR)	27/1,000	30/1,000
Under-5 Mortality Rate	45.4/1,000	32/1,000
Stunting (children under 5)	39.6%	35.5%
% Institutional deliveries	55.7%	88.6%
Life Expectancy	68.6 years	69.4 years
State Health Department expenditure as a share of total expenditure (%)	4.2	5.0
Crude Death Rate (CDR)	5.3	6
Crude Birth Rate	22.3	19.7
Still Birth Rate	4	1
Neo Natal Mortality Rate (NNMR)	21	23

Source: Compilation from Rural Health Statistics (2022-2023) Jharkhand, Health Dossier 2021: Reflections on Key Health Indicators – Jharkhand and NFHS-5 (2022-2023), Ministry of Health and Family Welfare, Government of India.

The data from Table 1 highlights significant health challenges in Jharkhand, including higher under-5 mortality (45.4/1,000) and stunting (39.6%) compared to the national average. Although the state’s Maternal Mortality Ratio and Infant Mortality Rate are better than the national average, other indicators, such as institutional deliveries (55.7%) and health expenditure (4.2% of total expenditure), suggest gaps in healthcare access and quality. Implementing Universal Health Coverage (UHC) in Jharkhand could address these disparities by improving access to essential health services, ensuring better maternal and child healthcare, and reducing mortality rates. UHC could also increase institutional deliveries and enhance health system funding, promoting equitable healthcare for all, especially in rural and underserved areas.

HEALTHCARE INFRASTRUCTURE

Jharkhand's healthcare infrastructure remains inadequate for meeting the needs of its population. The state has 355 Primary Health Centres, 194 Community Health Centres, and 24 District Hospitals, but these are often under-resourced and ill-equipped. A few key statistics are; Jharkhand has coverage of 77% for PHCs, but only 52% are functional with essential staff. The doctor-patient ratio in the state is much lower than the national average, exacerbating access to healthcare services. The state's health expenditure is about 6.2 % of its total budget (PRS 2024), which is significantly lower than the global benchmark of 10%.

Table 2: Shortfall of health facilities in Jharkhand

<i>Health Facility</i>	<i>Required</i>	<i>In Position</i>	<i>Shortfall</i>	<i>% Shortfall</i>
Sub Centres	6848	3848	3000	44%
Primary Health Centres (PHC)	1091	291	800	73%
Community Health Centres (CHC)	272	171	101	37%

Source: Rural Health Statistics, 2019-20

The data from Table 2 reveals significant shortfalls in health facilities across Jharkhand as of July 1, 2020. Sub Centres, with a required total of 6,848, have a shortfall of 3,000, indicating a 44% deficiency. Primary Health Centres (PHC) shows a more severe shortage, with only 291 out of the required 1,091 in position, reflecting a 73% shortfall. Community Health Centres (CHC) is relatively better, with 171 out of the required 272, resulting in a 37% shortfall. These gaps highlight the challenges in providing adequate healthcare infrastructure, underscoring the need for targeted interventions to achieve Universal Health Coverage in the state.

GOVERNMENT INITIATIVES FOR UHC IN JHARKHAND

Several government initiatives are focused on improving healthcare access in Jharkhand, although challenges persist in their implementation. Ayushman Bharat is a national health insurance scheme aimed at providing financial protection to economically vulnerable populations. The scheme provides coverage of up to INR 5 lakh per family per year for secondary and tertiary care hospitalization. In Jharkhand, the scheme has been implemented with the goal of reaching 1.3 million families. However, issues such as low awareness, lack of infrastructure to implement the scheme in remote areas, and limited uptake have hindered its success in Jharkhand. Chief Minister Health Insurance Scheme which aims to cover below-poverty-line (BPL) families in Jharkhand with financial protection for hospitalization. However,

the scheme does not cover outpatient services, preventive care, or pre-existing conditions, limiting its reach. The state has explored Public-Private Partnerships (PPP) in improving healthcare access, particularly for specialized services. Partnerships with private hospitals have helped in improving access to advanced diagnostic services and specialized care, but these services remain concentrated in urban areas. In response to the geographic barriers, Jharkhand has begun integrating telemedicine solutions. Through telemedicine, remote consultations are provided to patients in rural areas, particularly for maternal and child health services. Although still in the nascent stage, this initiative could help bridge the gap in healthcare access.

CHALLENGES TO ACHIEVING UHC IN JHARKHAND

While several government schemes aim to improve healthcare access, there are significant barriers to achieving UHC in Jharkhand: Jharkhand's fiscal capacity is constrained, and the state relies heavily on central funding for healthcare programs. This reliance limits the sustainability and scalability of health insurance schemes and health infrastructure projects. The shortage of healthcare professionals, particularly in rural and tribal areas, remains a major challenge (Kailash Satyarthi 2021). Incentive programs to attract and retain healthcare workers in these areas have had limited success. Jharkhand's hilly terrain and poor transportation infrastructure make it difficult for people in remote areas to access healthcare facilities. These barriers further marginalize tribal communities who already face cultural and social exclusions. Many tribal communities in Jharkhand rely on traditional medicine and have a distrust of formal healthcare systems. Health literacy is also low, particularly in rural and tribal areas, hindering efforts to encourage the utilization of formal healthcare services.

CONCLUSION

India's healthcare system faces a multitude of challenges, ranging from inadequate funding and infrastructure to workforce shortages and disparities in access. While the country has made strides toward Universal Health Coverage with programs like Ayushman Bharat, much remains to be done. Achieving UHC in India is not just a matter of policy; it requires systemic changes across financing, infrastructure, governance, and human resources. Jharkhand, as a predominantly tribal state with a largely rural population, faces considerable challenges in achieving Universal Health Coverage. The state's poor health indicators, limited healthcare infrastructure, and socio-economic disparities make achieving UHC particularly difficult. However, with targeted interventions, such as expanding health insurance coverage, strengthening primary care infrastructure, and leveraging technology like

telemedicine, Jharkhand can make strides toward UHC. By focusing on these areas, Jharkhand has the potential to serve as a model for other resource-constrained regions in India in achieving equitable and comprehensive healthcare access. A concerted effort by both the state and central governments, alongside innovative solutions and partnerships, will be crucial in overcoming the barriers to UHC in Jharkhand and achieving the broader goal of Universal Health Coverage in India.

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NEHRU'S ENVIRONMENTALISM AND ECOLOGICAL CONSCIOUSNESS

Naved Ashrafi*

Abstract

Prior to 1972 (Stockholm Convention), the environmental concerns at global level were not debated seriously. Member countries began to resort to environmental measures since then. But Jawaharlal Nehru, India's first Prime Minister, had a profound appreciation for the environment. Now it is interesting to underline his beliefs and concerns for sustaining environment. How did he perceive environmental problems at global level? It is argued that he believed in the harmony between humans and nature and emphasized the importance of scientific temper in addressing environmental issues. Our examination finds that he advocated for planning processes that would remove social tensions and create a balance between social and natural environments. Nehru's approach to the environment was holistic, integrating his views on science, culture, creativity, and spirituality to promote a unified view of global life. His emphasis on life's values, such as faith, creativity, and love, reflected his quest for world harmony and his belief in the need for a sustainable and balanced relationship with nature.

Keywords: Environmentalism, Jawaharlal Nehru, Nature, Culture, Science, Risk-Society, Global Harmony.

INTRODUCTION

We are the beings of 'risk society'. Prior to the advent of risk society, mankind has evolved gradually with numerous accolades to their credit like invention of wheel, hunting tools, ploughs, paper, gun powder and printing press. Later, an era of significant technological advancements and societal shifts came with the onset of industrial revolution in 18th century. This marked a substantial transition from an

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agrarian and handicraft economy to the one dominated by industry and machine manufacturing. Industrial revolution ushered humanity into an era of modernity. This refined era of industrial revolution was not without its odds; in fact, it paved the way for what later came to be known as the 'risk society'. The concept of risk society is concerned with the transition from 'modern industrial society to a new era distinguished much more by technological hazards' (Wright, 2015). It was theorised by Ulrich Beck in 1986 in greater context of German ecological politics. Risk society is a catastrophic society where the exceptional condition threatens to become the norm (Beck, 1992). It is a phenotypic outcome of the interplay between 'reflexive modernisation' ^[1] and 'issue of risk'.

Risk society is a socio-political domain where we find the locus of almost all debates on environment, climate change, global warming and sundry other terms. Serious environmental crises began to crop up at the global level right from the early 1960s when Los Angeles and New York City found themselves covered with heavy smog. But the terms like climate change, global warming, sustainability etc. could gain currency only in early 1980s. This doesn't mean that prior to early 1980s the issue of environmental degradation was not known to global leadership, religious texts and secular-philosophical discourse. The evolution of environmental concerns is very akin to that of Public Administration as a discipline of inquiry. Public administration as an institution of practice had existed since antiquity in China, India and Europe but its systematic study as a modern discipline of inquiry could start only after publication of Woodrow Wilson's seminal essay titled *The Study of Administration*. In the same vein, we can argue that a sense of environmentalism was a reality with global leaders, writers and institutions well before it gained currency in the late 20th century. In the sections that follow we shall focus on environmentalism and ecological consciousness of one of the great global leaders i.e. Jawaharlal Nehru.

JAWAHARLAL NEHRU AND THE ENVIRONMENT

Nehru was not an expert on environment and ecology, nor was he an environment crusader. He was the first prime minister of independent India. Before becoming the prime minister of newly independent country, he participated in the nationalist struggle under the leadership of Mahatma Gandhi. Nehru was educated in England and returned to India in 1912 after completing his studies at Harrow School and Trinity College, Cambridge. Nehru's ideological horizon was shaped by many factors like his education in England, impact of leaders like Tilak, Gandhi and Tagore, his visits to various countries during nationalist struggle, his meetings with his countrymen especially peasants, workers and students, and his habits of being an avid reader and nature's lover. In this paper, we shall discuss various factors that defined Jawaharlal's Nehru's ecological consciousness and his sense of

environmentalism. At first, we endeavour how he was deeply associated with nature and natural phenomenon. This will be followed by an understanding of how his perception of 'science' and 'culture' defines his environmentalism. In the latter part of this paper, we argue that Nehru's environmentalism was an extension of his deep understanding of socialism (vis-à-vis capitalism) and internationalism (vis-à-vis imperialism).

NEHRU AS NATURE'S LOVER

During the nationalist struggle Nehru was imprisoned nine times and spent about 3259 days in total (Nehru Portal, 2014). He wrote three major books during his imprisonment, namely, *Glimpses of World History* (1934), *An Autobiography* (1936) and *The Discovery of India* (1946). These are considered as magnum opus of Jawaharlal Nehru and these were perhaps his first and the last organized works. These provide surfeit of evidences of how Nehru loved nature. Nehru adopted the historical approach in writing these books. *Glimpses of World History* was written in the form of letters addressed to her young daughter, Indira Priyadarshini (Habib, 2011, p.38). In *Glimpses*, Nehru wanted to analyse himself and his own country with respect to the global history while in *Autobiography*, his focus was limited to the survey of national freedom movement. Nehru's fascination with nature and science is very much visible in the initial pages of *Glimpses*. In the chapter titled *The Lesson of History*, Nehru asks her daughter about a vantage point from where he should start and what should be the central point of his conversation with daughter. He then narrates her the saga of progress that world has made from simpler life forms to most advanced animals in the course of evolution. He talks about 'social organization' and spirit of 'cooperation' among different life forms. Nehru (1962, p. 7) has a lot to teach her daughter how a colony of insects should inspire human beings:

"We look down upon the insects as almost the lowest of living things, and yet these tiny things have learnt the art of co-operation and of sacrifice for the common good far better than man."

Nehru's understanding of nature exhorts one to adopt methods and instincts of cooperation, harmony, sacrifice and common good. In *Glimpses*, he calls for 'search for new ways, new aspects of the truth more in harmony with [the] environment' (Nehru, 1962, p.987).

When Indira Priyadarshina was ten years old, Nehru had written another set of letters to her. These letters preceded the *Glimpses* and this anthology, on Mahatma Gandhi's insistence, came to be known as *Letters from a Father to his Daughter*. Previously, Nehru had named these letters as *Dawn of History* but Mahatma Gandhi didn't like it and suggested two alternative titles, i.e. *A Father's Letter to his Daughter*

and *Letters to Indira* (CWMG, 1970, p. 256). Nehru's selection of the word 'Dawn' shows his unusual interest in natural phenomenon. This will be much clear if one reads the letters included in this anthology. The book opens with a letter titled *The Book of Nature* where he tells his daughter about how old the earth was and how mountains, rivers, plants and animals evolved. Nehru expressed his fascination on the story of a pebble that might have broken away from a large rock thousand years ago. That bit of rock was then pushed down the mountain by heavy rains and 'its edges were worn away' turning it into a small, smooth and shiny pebble (Nehru, 1994, p. 8). Subsequent letters in this collection were titled as *The Making of the Earth*, *The First Living Things*, *The Animal Appear*, *The Coming of Man*, *The Early Man* etc.

Similarly, *Toward Freedom*^[2] portrays a convincing picture of Jawaharlal Nehru of being an earnest admirer of nature. In the second chapter titled *Animals in Prison*, Nehru (1941) recalls his 'fortunate' days at the Dehradun Jail:

"I would have welcomed the outing in any place, but the sight of the towering Himalayas near by was an added joy which went a long way to removing the weariness of prison. It was my good fortune that during the long period when I had no interviews, and when for many months I was quite alone, I could gaze at these mountains that I loved."

He mentions about mountains, rains, hills, snow, winds, breeze, monsoon, heat, hailstorm, wasps, bats, foxes and many other living and non-living entities. Can one imagine that in this much avowed 'survey of nationalist movement' these entities could ever be accommodated! Nehru moves a step further and draws a beautiful picture on the symbiotic canvas of Dehradun Jail:

Prevented from indulging in normal activities, we became more observant of nature's ways. We watched also the various animals and insects that came our way. As I grew more observant, I noticed all manner of insects living in my cell or in the little yard outside. I realized that while I complained of loneliness that yard, which seemed empty and deserted, was teeming with life. All these creeping or crawling or flying insects lived their life without interfering with me in any way, and I saw no reason why I should interfere with them.

Nehru talks about his 'strange habits' in the prison where he would witness a stark competition between late moonlight and the approaching dawn. Nehru would derive hope and optimism from nature. In *Glimpses*, Nehru (1962, p.21) hopefully notes:

I have developed strange habits in prison. One of these is the habit of getting up very early – earlier even than the dawn... Have you ever seen the moonlight before the dawn and the slow change to day? Often I have watched this contest between the moonlight and the dawn, in which the dawn always wins. In the strange half-

light it is difficult to say for some time whether it is the moonlight or the light of the coming day. And then almost suddenly there is no doubt of it and it is day, and the pale moon retires, beaten, from the contest.

From aforementioned 'strange habits' one can simply realise that Nehru was learning the art of struggle from the contest between the moonlight and the dawn where ultimately dawn triumphs. Such a struggle gives Nehru a gleam of optimism for India's freedom from the scourge of British Raj. Certainly, dawn comes when the night is most deep.

Jawaharlal Nehru was a votary to global harmony, peace, brotherhood, democracy and constructive politics. Being a pupil of non-violent Gandhi, Nehru dreamt of a peaceful and cooperative world. In his famous *Tryst with Destiny* speech, Nehru longed for 'one world' characterised by peace, prosperity, brotherhood and democracy and alarmed that any kind of disaster in one part of the world would impact the other. Nehru observes:

[W]e have to labour and to work, and work hard, to give reality to our dreams. Those dreams are for India, but they are also for the world, for all the nations and peoples are too closely knit together today for any one of them to imagine that it can live apart. Peace has been said to be indivisible; so is freedom, so is prosperity now, and so also is disaster in this One World that can no longer be split into isolated fragments. (Gopal, 1985, p. 136)

By disaster, Nehru meant every disaster that had the potential to jeopardise the very existence of mankind on earth. It may include exploiting science for nuclear explosions, creating social disharmony for petty political gains, cutting forests in the name of development and even terrifying citizens with tyrannical use of state power.

NEHRU'S ENVIRONMENTALISM AFTER INDEPENDENCE

Nehru's love for nature did translate into his matured sense of environmentalism when he became the prime minister of India. Here, we discuss two such instances. In a letter addressed to chief ministers of states on 5th August 1954, Nehru wrote that he was writing this letter from Dalhousie, a hill station in East Punjab (now in Himachal Pradesh). In the letter, Nehru informed that he had visited Dalhousie almost thirty years ago. Nehru reached Chamba in a few hours by a motorized vehicle while thirty years ago, it took 'two full days to reach the destination on foot or on horseback' (Parthasarathi, 1988, p. 2). Nehru enjoyed this few hour journey but with great regrets he admitted that it was essential that the interior of mountains should be made accessible by road but it was gruesome to see 'the motor bus or lorry coming, puffing and hooting, and somehow desecrating the virgin forest', thereby destroying the charm of mountains (Parthasarathi, 1988, p. 2).

In another letter addressed to chief ministers of states on 15th August 1957, Nehru devoted approximately two pages to explain the need for protecting the environment while pursuing the development goals (Sahu, 2024). In this detailed letter, he talked about various issues concerning taxation, industry, productivity, post and telegraph, five year plans etc. While mentioning the indispensability of large river valley projects to the development saga, he emphasized on the ecological survey of the area so as to 'find out what the effect would be on the drainage system or the flora and fauna of that area' (Parathasarthi, 1988, p. 544; see para 28). To tackle the inundation of perennial rivers in northern plains, Nehru suggested to have a prior 'study of glacier recession in the Himalayas' (ibid, see para 29). Moreover, he informed the chief ministers that there was an International Union for Conservation of Nature and Natural Resources headquartered at Brussels. He exhorted that India should also have this conservation outlook. (ibid, see para 30). He remarked in 1957 that "[t]here is a certain economy in nature gradually established through the ages. We should certainly change this for man's benefit. But in doing so we should take every care that the change does not lead to some other evil consequences also, apart from the good that it is intended to do." (Sahu, 2024)

JAWAHARLAL NEHRU ON CULTURE, SCIENCE AND SOCIALISM

Nehru was an avowed socialist but his deep understanding of 'culture' was much considerate. Despite being an ardent follower of Mahatma Gandhi, his mind was little more in tune with India's cultural ambassador Rabindranath Tagore (Palat, 2016, p.02). Nehru's ideological and philosophical orientation leads us to his unfettered belief in harmony and cooperation towards a universal goal of common good. To Nehru, 'common good' was the kernel of science and culture, which calls for concerted and constructive efforts on part of mankind. In a public meeting at Puri in Orissa (now Odisha), Nehru defined two typologies of people in general, 'one interested in construction and other in destruction' and for realization of complete *swaraj*, argued Nehru, people should strive to work with constructive zeal (Gopal, 1990a, p. 21). In his presidential address at the Lahore Congress (1929), Nehru held that the methods of peace and non-violence were more promising, desirable and enduring than that of violence. (Gopal, 1973, p. 195). This is all that, according to Nehru, the 'culture' is comprised of. On human side, culture is a thing where there is room for cooperation for everybody (Gopal, 1990b, p. 114). In a very important speech titled '*The Spirit of Science*' delivered on the opening of National Fuel Research Institute at Dhanbad on 22nd April 1950, Nehru interestingly connects the dots between science, nature and culture:

"What ultimately does science represent? I suppose, the active principle of science is discovery... May I put it in a different way, that we seek the cooperation of nature, we seek to uncover the secrets of nature, to understand them and to utilize them for the benefit of humanity... Now, what is, if I may say so, the

active principle of any social framework of society? Normally it is conservatism, of remaining where we are, of not changing... Now it is interesting to see this apparently inherent conflict between the normal conservatism of a static society and the normal revolutionary tendency of the scientists' discoveries... [it] really means a restriction of culture and a denial of any kind of real culture, because culture is a widening of the mind and of the spirit. Culture is never a narrowing of the mind or a restriction of the spirit of a man or of a country" (Gopal, 1993, pp. 188-190).

Science, nature and culture seems to be harmonic synonyms that in their better spirit strive for universal good. Revolutionary potential of science needn't be confused with violence or chaos; revolution, argued Nehru, occurs when society changed itself from its roots; science was bringing that revolution (Palat, 2015, p. 245).

Nehru was seldom impressed by the concept of religion and its organized form but he was highly impressed by the Vedantic ideals. Nehru's environmentalism was a bit inspired by these Vedantic ideals. In *The Basic Approach*^[3], he notes:

"Vedantic conception that everything, whether sentient or insentient, finds a place in the organic whole; that everything has a spark of what might be called the divine impulse, or the basic energy or life force which pervades the universe. This leads to metaphysical regions which tend to take us away from the problems of life which face us. I suppose that any line of thought, sufficiently pursued, leads us in some measure to metaphysics. Even science today is almost on the verge of all manner of imponderables. I do not propose to discuss these metaphysical aspects, but this very argument indicates how the mind searches for something basic underlying the physical world. If we really believed in this all-pervading concept of the principle of life, it might help us to get rid of some of our narrowness of race, caste or class and make us more tolerant and understanding in our approaches to life's problems" (Nehru, 1958).

When Nehru widens the horizon of science and culture, it essentially means constructive efforts by people, society and nations. It includes all biotic and abiotic factors of our environment. It advocates the use of science for the welfare of mankind and reprimands the capitalist tendencies to exploit nature and natural resources, it condemns the domination of one nation by another and exploitation of nature by people or nations. His presidential address at the Lahore Congress expresses it all in a vociferous way:

"So long as there is the domination of one country over another, or the exploitation of one class by another, there will always be attempts to subvert the existing order, and no stable equilibrium can endure. Out of imperialism and capitalism peace can never come" (Gopal, 1973, p. 190).

Nehru traces the roots of environmental degradation in capitalism, war, conflict and imperialism. He argues that the 'acquisitive and competitive society must be ended and must give place to a co-operative order where we think in terms not of individual profit but of the common good.... where human values count for more and there is no exploitation of a class or group or nation by another' (Gopal, 1977, p.600). Instead of capitalism, Nehru preferred socialism. Through socialism, he sought the 'elimination of profit motive in society and its replacement by a spirit of social service and cooperation taking the place of competition, production for consumption instead of for profit.' (Nehru, 1936, p. 14)

CONCLUSION

In Nehru's time, environmental and ecological discourse was not in an advanced stage as found in 21st century, yet Nehru was not totally oblivious of the impending catastrophe of environmental degradation. He was quite apprehensive of the global scourge of imperialism, domination of one nation by another, avaricious and acquisitive tendencies of global capitalism, war, violence and hatred. How would these tendencies spare the nature and environment, if they could not bother about humanity in general. Nehru had seen the tragedy of the nuclear bomb, he witnessed famines and droughts, he had to go through wars. After a series of post-partition communal carnage, Nehru could get to know how to reconstruct a threadbare nation. Therefore, he always advocated for cooperation and harmony; cooperation between people, societies and nations, harmony between man and nature. When he abhors capitalism and embraces socialism, he warns us about our prospective avarice and greed that could jeopardise our won existence. When he rebukes imperialism, he informs us about exploitation of one nation, its natural, material and human resource by another nation. He prefers cooperation over competition, harmony over conflict, welfare over profit and synthesis over destruction. Nehru's environmentalism and ecological consciousness are thus shaped by his ideological, scientific and cultural moorings. In his Presidential Address at the All-Bengal Students' Conference on 28 September 1928, Nehru (Gopal, 1972, p. 195) optimistically said:

The world is in a bad way and India especially is in a perilous state in spite of the glitter and superficial splendour of our great cities. There are rumours of war and awful prophecies that the next war may result in irretrievable disaster to civilization. But the very excess of evil may hasten the cure.

NOTES

- [1] Reflexive modernization, a concept developed by Ulrich Beck, describes a shift in society where individuals and institutions actively reflect on and change themselves in response to social and technological changes, particularly in the face of risks.
- [2] *Toward Freedom: The Autobiography of Jawaharlal Nehru* is the original edition of *An Autobiography*. It was published by The John Day Company, New York in 1941.
- [3] Jawaharlal Nehru once penned down a confidential note titled *The Basic Approach*. The note was secretly shared by Nehru among a few of his comrades who suggested it be read widely by the people. Therefore, it was later published on 15 August 1958 in AICC Economic Review – the fortnight journal of the economic and political research department of the All-India Congress Committee.

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SANITATION, HEALTH, AND DIGNITY OF LABOUR: EXPLORING LIFE-WORLDS OF WORKERS IN THE CONTEXT OF SWACHH BHARAT AND THE SDGS

K.M. Ziyauddin* and Vishakha Jha**

Abstract

The intersection of health, dignity of labour, and sanitation within India's Swachh Bharat Mission (SBM) and the Sustainable Development Goals (SDGs) exposes the persistent contradictions between policy aspirations and the realities of sanitation workers. A mega ambitious and positively thoughtful scheme launched on October 2, 2014 to eliminate open defecation and improve hygiene, SBM represents a landmark national initiative aligned with SDG 6 (Clean Water and Sanitation), SDG 3 (Good Health and Well-being), and SDG 8 (Decent Work and Economic Growth). Yet, studies about the life-worlds of sanitation workers reveal how caste-based hierarchies, informal labour, and structural neglect continue to shape their everyday experiences. Historically confined to Dalit communities, particularly the Valmiki, Bhangis, Mehtar and a few other caste categories, these workers perform most essential yet stigmatised tasks such as manual scavenging, drain cleaning, and waste collection, often without protective gear, health insurance, or legal safeguards. Despite the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act (2013), poor enforcement perpetuates hazardous working conditions and social marginalisation. Drawing on the phenomenological concept of "lifeworld" (Schutz; Habermas) and Bourdieu's notion of "symbolic violence," this paper argues that dominant sanitation discourses like SBM obscure the deeper inequalities embedded in caste and labour relations. A shift from a technocratic, target-driven policy framework to a people-centred, rights-based model is imperative to ensure the health, dignity, and social inclusion of sanitation workers. Recognising them as active agents rather than passive beneficiaries is vital to bridging the gap between the rhetoric of cleanliness and the reality of exclusion, thereby aligning India's sanitation goals with broader principles of social justice and human dignity.

Keywords: Sanitation, Health, SDGs, Occupation, Swachh Bharat Abhiyan, Caste, Discrimination & Manual Scavengers.

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INTRODUCTION

The crossroads of health, dignity of labour and sanitation especially in relation of the a much celebrated mega policy Swachh Bharat Mission (SBM) and a globally consented agenda of the Sustainable Development Goals (SDGs), does focuses the vividness and intertwined realities mostly faced by the sanitation workers. All from the beginning SBM aimed to bring change and improve sanitation and hygiene in the society and nation, however it remains critical to understand and examine how far such national efforts influence the lives of people into this works and how working conditions of individuals directly involved in the sanitation occupation, and ensuring their health well being and dignity in life-world.

The launch of Swachh Bharat Mission (SBM) on 2nd October, 2014 on the occasion of birth anniversary of Mahatma Gandhi, a fighter against manual scavenging sends a message of elimination of open defecation and to improve the solid waste management in cities, towns and rural countryside. It also pronounced to be addressing and promoting hygiene and waste disposal management by bringing behavioural changes among the citizens. In the recent past after SDGs declaration and launching of SBM in India, there had been glaring concern to the questions of sanitation, hygiene, ODF and reducing inequality based on caste and gender that is deeply embedded in traditional division of labour in Indian economic functioning. It is in this complex relational value, the intersectionality of **health, labour dignity, and sanitation** has gained improved scholarly thought in the wake of the Swachh Bharat Abhiyan (SBA), a flagship programme launched by the Government of India in 2014.

Whereas the flagship SBA has been illustrious policy for creating awareness, promoting cleanliness and bringing hygiene by making it a national movement in a sense, a critical sociological engagement with the **life-worlds of sanitation workers who are** the principal agents of this overall transformation divulges intensely ingrained inequalities, caste hierarchies, and structural neglect (Gidwani & Corbridge, 2014; Srivastava, 2020). Lifeworld (Lebenswelt) as a concept originates from the phenomenological tradition, closely associated with the founders of this school, Alfred Schutz and Jürgen Habermas. They referred this to an act of lived life, how people experience life in the everyday world, and the way subjective realities of every individual within their social contexts explain everyday life.

In this pattern, sanitation workers' lives are shaped by a century-old caste-based discrimination that has put them into stigmatised occupations, purely informal labour relations, and even working with government agencies and urban corporations. This increases their vulnerability to serious health hazards, despite the considerable rhetoric of national progress and development (Chatterjee, 2019; Singh, 2021). Historically, sanitation work in India has been linked to Dalit

communities, especially the Valmiki caste, who are disproportionately employed in manual scavenging, drain cleaning, rubbish collection, and other hazardous tasks. Despite the essential nature of these roles, they are often viewed as “dirty work,” reinforcing caste-based divisions of labour (Ambedkar, 1936; Anand, 2016). Although SBA’s aims align with the Sustainable Development Goals (SDGs) – notably SDG 6 (Clean Water and Sanitation), SDG 3 (Good Health and Well-being), and SDG 8 (Decent Work and Economic Growth) – the realities faced by sanitation workers reveal a paradox: they contribute to global development targets yet are often excluded from realising their benefits. The well-being, health, and physical safety conditions of all sanitation workers are extremely poor and rank among the worst in the world. A Lack of protective equipment either tools or gloves, mask etc., complete absence of medical insurance, and grossly inadequate occupational safety standards always leave them extra vulnerable to respiratory diseases, various skin infections, and even fatalities during septic tank cleaning and hundreds of casualties are testimony to these ignorance (Human Rights Watch, 2014; Jain, 2020).

A large amount of research evidence and studies have shown that the Parliamentary Law known as “the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act (2013)”, things have not changed much, and this is grossly due to a lack of vigorous enforcement and a fragmented approach for eliminating discrimination against sanitation workers. Furthermore, the dignity of labour – a core principle of both constitutional rights and SDG 8 – is systematically eroded by ongoing social stigmatisation and economic invisibility of these workers. This contradiction exemplifies what Bourdieu (1990) would describe as symbolic violence: when dominant discourses (such as SBA) naturalise and perpetuate the marginalisation of sanitation workers while concealing underlying power structures. A genuinely inclusive sanitation policy must therefore move away from a technocratic, target-focused approach to a people-centred, rights-based model that recognises the social embeddedness of sanitation work. This involves not only acknowledging sanitation workers as rights-holders but also actively engaging them in policy discussions, facilitating occupational mobility, and upholding their social dignity (Ray, 2019; Ziyauddin, 2022).

It is evident from the available literature how sanitation work in India is linked to a few caste groups, and primarily they are referred to as Dalit communities. One of the most populous communities in this occupation is the Valmikis, who are disproportionately employed in sanitation work (previously referred to as manual scavenging), which involves cleaning drains and collecting garbage from door to door, in urban settlements, or from any corner of the countryside. They are engaged in other health-hazardous jobs. It is evident how essential all such roles and works are; they are quite often viewed as “the dirtiest work,” “filthy”, reinforcing caste-

based and gendered divisions of labour (Ambedkar, 1936; Anand, 2016). Although SBA's aims align with the Sustainable Development Goals (SDGs) – notably SDG 6 (Clean Water and Sanitation), SDG 3 (Good Health and Well-being), and SDG 8 (Decent Work and Economic Growth) – the realities faced by sanitation workers reveal a paradox: they contribute to global development targets yet are often excluded from realising their benefits.

The health and safety conditions of sanitation workers are frequently poor. Lack of protective equipment, absence of medical insurance, and inadequate occupational safety standards leave them vulnerable to respiratory diseases, skin infections, and even fatalities during septic tank cleaning (Human Rights Watch, 2014; Jain, 2020). It is certain that no dignity of labour is reaching their lives, which remains a fundamental principle of both constitutional rights and the Sustainable Development Goals (SDG 8); instead, there is a systematic erosion of justice principles and an increase in social stigmatisation and invisibility in the economic sectors of these workers. This contradiction exemplifies what Bourdieu (1990) would describe as symbolic violence: when dominant discourses (such as SBA) naturalise and perpetuate the marginalisation of sanitation workers while concealing underlying power structures.

A genuinely inclusive sanitation policy must therefore move away from a technocratic, target-focused approach to a people-centric, rights-based model that recognises the social embeddedness of sanitation work. This involves acknowledging sanitation workers as rights-holders and actively engaging them in policy discussions, facilitating occupational mobility, and upholding their social dignity (Ray, 2019; Ziyauddin, 2022). lives, they are shaped by stigmatised occupations, caste-based exclusion, informal labour relations, and vulnerability to health hazards, despite the rhetoric of national progress (Chatterjee, 2019; Singh, 2021).

Sanitation work in India is historically associated with Dalit communities, particularly the Valmiki caste, who are disproportionately employed in manual scavenging, drain cleaning, garbage collection, and other hazardous jobs. Despite their essential nature, people perceive these occupational roles as “dirty work”, thereby perpetuating the caste-based division of labour (Ambedkar, 1936; Anand, 2016). While SBA's goals align with Sustainable Development Goals (SDGs) notably SDG 6 (Clean Water and Sanitation), SDG 3 (Good Health and Well-being), and SDG 8 (Decent Work and Economic Growth) – the lived realities of sanitation workers reflect a paradox: they contribute to global development goals but remain excluded from their benefits.

Health and safety conditions of sanitation workers are often dire. Lack of access to protective equipment, absence of medical insurance, and poor occupational safety standards expose them to respiratory diseases, skin infections, and even fatalities in septic tank cleaning (Human Rights Watch, 2014; Jain, 2020). Despite legal interventions such as the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act (2013), implementation remains weak and fragmented.

Moreover, the dignity of labour, a principle central to both constitutional rights and SDG 8, is systematically undermined by the persistent social stigmatisation and economic invisibility of these workers. This contradiction points to what Bourdieu (1990) would describe as symbolic violence – when dominant discourses (like SBA) naturalise and reproduce the marginalisation of sanitation workers while masking the structures of power. This marginalisation not only perpetuates inequalities but also hinders efforts towards comprehensive reform. To address these issues, a concerted effort is required to challenge prevailing narratives and advocate for the rights, recognition, and dignified treatment of manual scavengers within society.

A truly inclusive sanitation policy must thus shift from a technocratic and target-driven model to a people-centred, rights-based approach, acknowledging the social embeddedness of sanitation work. This requires not only the recognition of sanitation workers as rights-bearing citizens but also their active participation in policy discourse, occupational mobility, and social dignity (Ray, 2019; Ziyauddin, 2022).

Sanitation workers are not merely implementers of policy but social actors with agency, histories, and aspirations. A sociological understanding of their life-worlds reveals how caste, labour, and state policy intersect in shaping their health, dignity, and livelihoods. Bridging the gap between Swachh Bharat's aspirations and SDG commitments demands not just infrastructure but social justice, dignity, and systemic reform. SBM's initiatives include a nomenclature giving mechanism to sanitation workers, designating them as "Swachh heroes" or "Swachhgrahis," who are supposed to champion the cause of sanitation and hygiene in society.

HOW DOES THIS WORK?

The structure of traditional occupations of the persons involved in innumerable traditional and family-based jobs and occupations in India has been an essential issue of deliberations and research for decades, if not centuries. The paper is based on research into the Clean India Mission (CIM) or Swachh Bharat Mission (SBM) and how people working in various occupations persisted in practising their traditional lines of work despite several legal measures by the Indian government across the country. Is caste more prevalent because it makes it difficult for people to leave their caste-based jobs or because they cannot find other jobs in cities with

diverse occupations? The SBM prioritises the Clean India Mission, which also seeks to lessen the number of people employed in menial labour. The relevance of the policy to the life of sanitation workers in India today is thus called into doubt.

Instead of being a desirable issue with such political relevance and erudite value, the idea of sanitation and health is often thought of as a subject confined to a small number of academic and political conversations. Talking and discussing it involves menial groups of the population who have been treated as untouchable and people who should be kept at the margins or outskirts of the mainstream settlements. On the one hand, it would be accurate to state that sanitation in contemporary India has become a brand-new philosophical and political problem. On the other side, the same state has started taking quite striking actions.

Two significant social sectors that call for in-depth research and analysis of current issues and difficulties are clean India and smart cities, and they are known as the most potent policy intervention in two renowned government programmes. There is a lot of surface chatter and complaint about health, sanitary, and hygiene issues, even though many academics discuss and publish these topics.

This article briefly explains the intricacies and challenges of current sociological concerns with sanitation and health within the context of policies put out in India, in addition to going into the more profound intricacy of the Clean India Mission within the context of smart cities. How much do we understand about sanitation workers and how they fit into current regulations? In order to widen the scope of governmental activities and close the gap between policy and implementation, this will provide policymakers with information and feedback.

Urban infrastructure and living are being transformed in a ground-breaking endeavour to keep pace with the top cities in the world. In the last ten years, the smart city has landed in India, and it's political, corporate, and neoliberal intellectual classes have grown enamored. The smart city mission quickly rose to prominence during the Indian general parliamentary elections of 2014, when the ruling political party made it a central part of its platform and discourse on development. Although there are some great expectations for this policy, it has yet to be determined whether or not it would enhance urban living.

After rival political parties could not develop any workable new alternative urban visions, the Smart City concept was approved and employed as a powerful policy tool in India's urban development. Business leaders have praised the smart city initiative as a significant economic opportunity that uses urbanisation as a direct location for wealth creation. The smart city in India is a creation of the capitalist elite that aims to invest in the community and continuously generate surplus value through built form. On the other hand, the conversation about smart cities is divided and limited to significant current cities and potential future ones.

The discussion surrounding smart cities has disregarded small and midsize towns and communities.

Cities are increasingly seen in India as commodities that must be produced, packaged, and promoted before being sold. Private multinational firms' involvement and commitment to this endeavour show how adequate the capital has made cities significant locations for developing surplus value. Integrating a high-tech complex into the built environment will produce a sizable surplus.

The Indian Prime Minister unveiled the mega and ambitious Mission of Smart City for the nation India in Delhi in June 2015. The Indian government pledged to "create 100 smart cities by 2020" as part of the Smart City Mission. Both creating new places, or "greenfields," and revitalising existing areas through "retrofitting, redevelopment, and pan-city application of specific smart solutions to existing infrastructure" are included (Ministry of Urban Development 2015: 5-8).

VIEWING SMART CITY

The "100 Smart Cities Mission" was introduced on June 25, 2015, by the Prime Minister of India. The Indian Cabinet has allocated 98,000 crores (approximately \$15 billion) to create 100 smart communities and revitalise 500 others. The Smart Cities initiative and the Atal Programme for Rejuvenation and Urban Transformation (AMRUT) would receive 50,000 crores (approximately USD 7.7 billion) in funding from the Cabinet. At the time, the nation's union government's finance minister Arun Jaitley stated that the 2014 Union budget allocated \$7,016 crore (or nearly \$1.1 billion) to India's 150 smart cities. Only in February 2015, 924 per cent of the allocated amount, or US\$140 million, had been utilised. Consequently, the 2015 Indian Union budget allocated only 143 crores (US\$22 million) to the project.

According to a statement released by the Centre on Wednesday, the Union Budget 2023–24 will increase funding for the Swachh Bharat Mission (Urban) by 150 per cent to Rs 5,000 crore. However, funding for the construction of non-residential office buildings, including the Central Vista project, Parliament, and Supreme Court, has decreased by 9%, from Rs 2,344.08 crore in the previous fiscal year to Rs 2,132 crore in the current fiscal year. AMRUT (Atal Mission for Rejuvenation and Urban Transformation) received Rs 8,000 crore instead of Rs 6,500 crore in the revised estimates for the prior fiscal year.

The Smart Cities Mission was allocated 8,000 crores, a decrease from the amended estimate of 8,800 crores for the previous year. The SBM Phase II Second Phase commenced in 2020. It is necessary to perceive and investigate how sociopolitical developments will influence the second phase of the working world.

THE INTENTS

The scope of the programme was expanded in 1999, and Total Sanitation Campaign (TSC) was launched. In 2012, the government revamped TSC to Nirmal Bharat Abhiyan (NBA), which continued till late 2014 before being renamed Swachh Bharat Abhiyan (or SBM as it is known today) by NDA. SBM advocated for access to sanitation by making it “everyone’s business” and given the size of India’s rural population, the government organised campaigns involving locals and kids from homes, schools, healthcare facilities, government offices, and more. These volunteers, known as swachhgrahis, as mentioned were trained to communicate critical messages to their communities daily, track their progress using mobile devices, and mobilise community volunteers.

IMAPCTS

SBM assisted 630,000 villages’ 100 million rural families, and 500 million citizens in getting access to toilets. The benefits for households in open defecation-free villages – with a toilet in every home – are up to INR 50,000 per year and are 4.7 times greater than the total costs (UNICEF, 2018). This included savings from fewer sick days to time saved waiting for treatment or travelling there. Compared to communities without 100% toilet coverage, soil and groundwater sources in ODF villages were often less contaminated (UNICEF, 2019). Additionally, it was determined that SBM had produced the equivalent of 7.5 million full-time jobs. As a result, sanitation access has benefited vulnerable populations economically and environmentally through its positive effects on other SDGs that promote environmental protection and social mobility. The government took corrective steps to lessen the difficulties associated with coercion.

ENABLING FACTORS AND CONSTRAINTS

SBM was supported by influential figures such as the Prime Minister of India. Consequently, it may be simpler to construct effective monitoring systems, training for tens of thousands of implementers and community volunteers, and advocacy campaigns backed by local role models such as religious leaders. As it was deemed “everyone’s business,” SBM was required to pay a special levy. By permitting state governments and district implementers flexibility in how they chose to carry out the national effort at the local level, it was possible to overcome the limitations posed by varying geographies and cultural requirements.

SUSTAINABILITY AND REPLICABILITY

SBM utilised variants of the community-led total sanitation (CLTS) strategy in conjunction with administrative and financial incentives to promote long-term

behaviour modification. Rural communities were motivated to demand restrooms through community mapping, and transect walks to determine how and where open defecation impacts health outcomes. In addition, it supported environmentally responsible and cost-effective sanitation practices and discouraged transitory constructions. The low-cost twin-pit latrine technology enables people to use local resources and reduce their dependence on costly faecal sludge treatment facilities by converting filled pits into safe fertiliser using the second pit. Finally, it accelerated implementation using a cascade strategy that established pools of master trainers in each state and district. These pools then trained grassroots implementers, who sent vital messages to residences, childcare facilities, schools, and hospitals. This has been effective in expanding while retaining community support.

DISCUSSIONS

The efforts of the mission are make modest efforts towards comprehensive city planning and development. This policy prioritises the development of “layers of smartness” centred on “sustainable and inclusive growth” to establish the groundwork for achieving this long-term objective. Nevertheless, the Mission paper (Ministry of Urban Development, 2015: 6) states that “the objective of the Smart Cities Mission is to generate economic growth and improve people’s quality of life by enabling local area development and utilising technology, particularly technology that produces Smart results.” The Indian government has launched the Smart Towns Mission, also known as the Smart City Mission, a municipal rehabilitation and retrofitting programme to build 100 sustainable and livable cities. So in the direction of the efforts, except for West Bengal, all Indian states and union territories participate in the five-year plan by submitting at least one city for the Smart Cities Challenge. It was agreed to that between 2017 and 2022, the federal and state governments would provide financial assistance to the cities, with results anticipated in 2022 that needs a relook with diligence and honesty now.

After the launch of the Clean India Mission, there was much discussion about hygiene as a sacred requirement for a civilised society. By proclaiming “cleanliness is godliness,” the founder of the Indian nation, Mahatma Gandhi, achieved double prominence. Babasaheb Ambedkar, the author of the Constitution, disagreed with Gandhi’s specific views on cleanliness and employment selection based on caste and family birth. Every community member must maintain high personal hygiene and sanitation standards. However, because they were born into a low caste, workers in hazardous industries received no consideration.

As a result, sociological research is essential for comprehending the reactions of low-wage employees, including sanitation workers and women who clean restrooms, among others. The Clean India Mission’s objective will be simpler

with fewer policy loopholes. According to a universal truth, half of the world's population resides in metropolitan areas, including cities of all sizes. According to the report titled "World Urbanisation Prospects, 2018," 35% of global population development will occur in urban regions between now and 2050, particularly in India, China, and Nigeria. It is anticipated that 416 million individuals will migrate to cities in India.

The number of people living in urban areas rose sharply from 751 million in 1950 to 4.2 billion in 2018. Africa and Europe both have 13% of the world's urban population, albeit they are both urbanising more slowly. Asia has 54% of the world's urban population. In 2018, 82% of Northern America's population resided in urban areas, compared to 74% in Europe, 81% in Latin America and the Caribbean, and 68% in Oceania. Asia's urbanisation rate is quickly approaching 50%. Although most Africans still live in rural areas, only 43% live in metropolitan areas. Consequently, India is anticipated to have one of the highest urbanisation rates in the world and will require more from future policy initiatives. In the future, employing human resources by teaching and equipping individuals with a basic comprehension of technology will be optimal. Most Dalits are safai karamchari/sanitation workers and need to comprehend how cities will provide them with new opportunities, according to multiple interactions with them. Their experiences in the actual world have revealed no phenomenological expansion.

PEOPLE AS MENIAL LABOUR AND THE CONTEXT

Numerous perspectives have been considered when analysing the sanitation and cleaning of Indian towns and villages. The Indian societal structure has included cleaning up filth and human waste since many millennia ago. It has maintained inequality between various caste groups based on profession. Many families, such as the Bhangis, Mehtar, Halalkhor, Hadis, Rellis, and Balmiki, are denied the opportunity to live in a dignified setting because of their low caste birth (Srivastava, 1997; Shyamlal, 1981, 1992; Ramaswamy, 2005; Sacchinanda, 2002; Ziyauddin, 2016, Ziyauddin, 2017).

By simultaneously addressing manual scavengers in terms of training and giving present work to such a big Indian labour population, the policy conundrum can be quickly overcome. Neither the type of work they do – informal or industrial – nor their employment statuses are relevant. Not all caste groups involved in the physical cleaning of drains and toilets benefit from passing traditional work from one generation to the next. The country's policy goal and necessity is to make it into a developed nation by all standards. No matter their rank or station, all employees must be treated with dignity and respect if they are to be valued as such.

CONCEPTUALISATION OF LIFEWORLD AND OCCUPATION

In contrast to the objective “worlds” of the sciences, which utilise the mathematical sciences of nature, although these sciences have their origins in the life world, they are not those of daily life. Personal, social, perceptual, and practical experiences comprise the life world. The objectivism of science obscures both the genuine subjective origins of the Lifeworld and the Lifeworld itself. By examining time, space, the body, and the very givenness or presentation of experience in analysing and describing the Lifeworld, phenomenology aims to demonstrate how the worlds of theory and science are derived from the Lifeworld and the everyday phenomena of the Lifeworld itself.

The term “lifeworld” describes an environment distinguished by the standard methods of structuring activities, such as the common use of tools and materials, the “loop invariants” that conventional activities preserve, etc. The term is derived from phenomenological sociology, which describes the familiar world of daily life and, more specifically, how that world is defined in terms that are significant for a particular lifestyle.

It is conceivable, for instance, that despite sharing the same physical environment, cats and humans lead very different lifestyles. People and cats have distinct associations with various objects, including televisions, balls of yarn, fabric, window sills, and the spaces under chairs. While there are similarities between these two lifeworlds, a kitchen presents a different lifeworld to a chef than to a mechanic. A member of a low caste who is compelled to work in sanitation as their only option will act and communicate differently than a member of a family with the privilege and ability to engage in multiple occupations. The social advantage of not being required to perform menial tasks creates an entirely different existence than those who have been compelled to do the same. Lifeworld refers to the systematic ways a physical environment serves a purpose within an activity.

Despite their vast differences, this approach is comparable to Gibson’s theory of perception. Gibson claims that the experience of external affordances is direct, but we believe that it can be explained in terms of causation. Gibson believed that perceptual categories were inherently biological and biological, whereas we perceive them to be cultural and emergent.

To analyse a lifeworld, one must make a concerted effort to identify the internal structures that support its routine operations. For example, lifeworlds frequently contain objects, such as instruments, that have evolved to facilitate such behaviours. The environment is designed around these instruments to simplify people’s lives and lessen their cognitive burden. For instance, containers are typically stored in cabinets, whereas food is kept in refrigerators and grocery stores. Once the dairy

area is visible, the butter will be visible in a specific area, so there is no need to remember where to find it at a specific grocery store.

Additionally, artefacts are designed to exhibit their functional properties. Hand handles are suitable for lifting objects, knobs for turning, spikes for impaling objects, etc. [9, 43]. On the other hand, it is generally acknowledged that artefacts are interchangeable if there are no glaring reasons to do otherwise. Lifeworld frequently provides a second method to mark an object when a functionally significant property is unclear. You must have strong evidence to the contrary to presume that the record player you see in my home belongs to me. These characteristics of lifeworld's make it simpler to perform various tasks without having to commit a great deal of information to memory or build the screwdriver from scratch.

Lifeworld's are networks of interconnected laws and customs that facilitate particular aspects of a particular activity. The exercises alleviate agents of the pressure to immediately solve specific problems and distribute their solutions across the actions of the agent or group of agents. For instance, a hospital may attempt to function without maintaining cleanliness. Because germs are always present, individuals are always contagious. The issue is preventing these maladies from spreading out of control. Continuously monitoring patients, assessing their level of infection, and administering the necessary remedies would be the most straightforward method. Since this is undesirable for several reasons, a hospital focuses on keeping patients clean by preserving sterile environments. To achieve this, they could search for and sanitise polluted objects and surfaces, for instance. Throughout the COVID-19 and post-COVID eras, numerous hospitals made exceptional preventive efforts.

Unfortunately, sterility is not evident immediately. As an alternative, hospitals coordinate space and activities to combat the issue. Different locations are kept more or less antiseptic based on their traditional uses; for instance, operating rooms are kept more sterile than corridor floors and hallways. People and objects that can transmit pathogens are cleansed, gloved, and masked. Important instruments that come into contact with them are adequately sterilised after use. When deposited in a garbage can (or biohazard bag), tongue depressors are deemed unclean; however, when wrapped in paper, they are deemed clean. Regardless of the level of contamination, all objects and surfaces are routinely disinfected. These practices continue to be followed whether or not they are currently necessary. The hospital personnel would continue to wash their hands and clean the restrooms even if no patients were present.

As a result, sanitation workers who clean up the filth and filth of the city (for example, in Hyderabad, Bokaro, and Dhanbad) must find tools for their work, look

for the right person or family who can provide them with a proper job and a means of subsistence, and engage in a number of other essential activities.

In *The Crisis of European Sciences and Transcendental Phenomenology* (1936), Edmund Husserl introduced the concept of the Lifeworld. We, each “I-the-man,” and all of us collectively, belong to the world insofar as we live with one another in the world. The world is our world, valid for our consciousness as existing precisely through this “living together,” regardless of how we may perceive the world as the universal horizon, as the coherent universe of existing objects. This is true for more than just me, the individual ego; instead, we have the world predetermined in this collectively, we belong to the world as the world.

Husserl argues that this inter-subjective collective pool of perceiving is always present and, for humanity’s purposes, capable of arriving at “objective truth,” or at least as close to objectivity as possible. The “lifeworld” is a grand theatre of objects variously arranged in space and time relative to perceiving subjects, and it is the “ground” for all shared human experiences. The disciples of Husserl, including Maurice Merleau

The concept represented a departure from Husserl’s phenomenology from the Descartes and Kant tradition. Before this, Husserl had concentrated on discovering, illuminating, and explaining an absolute foundation of philosophy in consciousness, with no presuppositions other than what can be discovered through a reflective examination of consciousness and what is immediately available. Initially, all real-world judgements were to be “bracketed” or suspended and then analysed to determine the role of consciousness in their production or construction. With the concept of the Lifeworld, Husserl took a different approach, recognising that awareness is already embedded in and acting within a socially, culturally, and historically constructed world of meanings and preconceptions. In contrast to Husserl’s earlier work, phenomenology became the study of consciousness and meaning in context rather than the pure awareness and meanings of a transcendent ego. The Lifeworld is one of the more complex concepts in phenomenology due to its dual status as subjective and objective.

According to the phenomenological concept of intersubjectivity, the Lifeworld can be intersubjective despite the fact that each person must bear his or her own “personal” Lifeworld (“homeworld”); meaning is intersubjectively accessible and can be shared (among one’s “home comrades”).

Alfred Schütz’s phenomenological sociology, which attempted to combine Husserl’s phenomenology of consciousness, meaning, and the Lifeworld with Max Weber’s sociology and its emphasis on subjectively expressive conduct, began with Husserl’s explanation of the Lifeworld. Jürgen Habermas expanded on the concept of the Lifeworld in his social theory. According to Habermas, the Lifeworld is

the “background” milieu of competencies, practises, and attitudes which can be represented in terms of an individual’s cognitive horizon. Habermas’s social theory is rooted in communication and focuses on the Lifeworld as a collection of socially and culturally sedimented linguistic meanings. It is the realm of implicit culturally-based understandings and reciprocal adjustments. According to Habermas’ two-volume *Theory of Communicative Action*, the instrumental rationality of bureaucracies and market forces colonises and rationalises the Lifeworld.

According to Habermas, practical reason regulates communicative behaviour; ideas of social significance are mediated through the process of language communication in accordance with the principles of practical reason. On the other hand, technical rationality governs systems of instrumentality, such as factories or, more broadly, the capitalist economy or democratic political government. The laws of a system mediate concepts with instrumental value (the most evident example is the use of cash in the capitalist economy). Self-deception and, consequently, systematically distorted communication is only possible when the Lifeworld has been “colonised” by instrumental rationality so that an unjustifiable social norm emerges and enjoys the legal authority. This occurs when a method of mediating instrumental ideas acquires communicative power, such as when an individual pays a group of people to remain mute during a public debate or when financial or administrative resources are used to promote a social viewpoint. People colonise the Lifeworld and systematically distort communication when they embrace the resulting consensus as normatively significant. Since the use of steering media to accomplish social consensus is not indigenous to the Lifeworld, the decision-making processes of the systems world must imperialistically encroach upon the Lifeworld.

The fragmented perspectives of local culture make it impossible to comprehend the metropolis and global market from the periphery. When their ideological veils are lifted, autonomous subsystem imperatives join the Lifeworld from the outside, much like colonial rulers entering a tribal culture, and force an assimilation process. According to Habermas, the fragmentation of consciousness associated with the two Marxist concepts of alienation and false consciousness merely illustrates the more pervasive phenomenon of lifeworld colonisation.

Individuals and interactions are inherently life worldly, so they rely on custom and cultural traditions to establish identities, define circumstances, coordinate action, and foster social cohesion. This occurs ideally through communicative understanding (German: *Verstehen*), but it can also occur through institution-based common practises, beliefs, values, and communicative interaction patterns. There are connections between the concept of the Lifeworld and other concepts, such as the sociological concept of daily life and Pierre Bourdieu’s concept of

habitus. According to Kraus, “lifeworld” and “life conditions” are synonymous with the following:

Lifeworld is an individual’s subjective construction of reality based on their life circumstances. “Life conditions refer to a person’s material and immaterial life circumstances.” This contrasted comparison provides a conceptual specification for distinguishing between a subjectively experienced world and its material and social conditions in the first phase and focusing on the relevance of these conditions for the subjective construction of reality in the second phase.

The essential question is, “What aspect of our experience is the most real?” since sanitation workers create their own lives and experience the real world. The *Lebenswelt*, or “lived world,” is the foundation of human beings and consciousness. According to Husserl and Merleau-Ponty, these moments of direct, pre-reflective experience are the most real. All other aspects of their lives revolve around their social space, and only they have access to the public sphere.

SANITATION, HYGIENE AND SDGS

The 2004-launched WASH project concentrates on long-term prevention and control measures for enhancing socio-economic development, reducing poverty, and improving health, as well as responding to international disasters and outbreaks of fatal diseases. Access to safe water, adequate sanitation, and hygiene education can reduce disease-related illness and death, improving health, poverty reduction, and socio-economic development.

The Ministry of Drinking Water and Sanitation, the Ministry of Health & Family Welfare, and WHO Country for India organised a workshop to disseminate the key findings of an assessment conducted by WHO to examine the health benefits of the Swachh Bharat (Clean India) Mission’s achievements. Some studies at the behest of the Ministry of Drinking Water and Sanitation provide preliminary estimates of the health benefits anticipated from decreased diarrheal disease and malnutrition due to the Swachh Bharat campaign’s increased sanitation coverage.

CONCERNS

It is anticipated that between 2014 and October 2019, Swachh Bharat Mission (SBM) - Grameen will prevent over 300,000 fatalities attributable to diarrhoea and protein-energy malnutrition. Before the implementation of the SBM in 2014, it was estimated that inadequate sanitation caused 199 million cases of diarrhoea yearly. In October 2019, when everyone will have access to safe sanitation facilities, they will be virtually extinct. Between 2014 and October 2019, diarrhoea and protein-

energy deficiency are anticipated to prevent over 14 million DALYs (Disability-Adjusted Life Years).

STRUCTURE OF SBM

The involvement of various stakeholders in this mega project has been tremendous and makes it quite a valuable project for future clean India. I use here clean considering the future outcomes that invite a diverse group of ideological standings that can hold the idea of a clean India. The structural involvement shows various aspects of challenges though engaging in sanitation has become more visible. The following diagram 1 shows how the target groups, like sanitation workers (erstwhile manual scavengers), can be addressed by providing alternate work and allowing social mobility that has been restricted for ages.

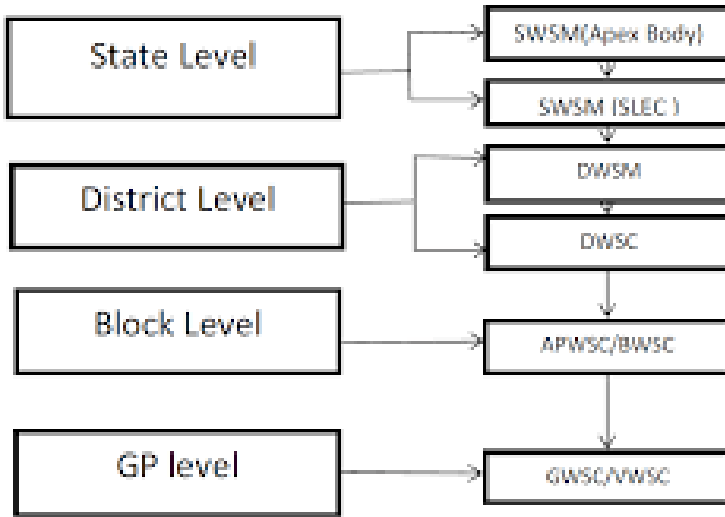


Source: NDTV October 1, 2016.

THE ADMINISTRATIVE INVOLVEMENT

The administrative involvement shown in the diagram 2. shows a top-to-bottom interdependency and a high level of accountability in the east district headed by the Deputy Commissioners or Deputy Magistrates of the respective districts across the country. A heavy fund flow and the target-based outcome have given the system leverage to make ODF-free and rehabilitate manual scavengers.

1. Administrative set up for implementation of SBM(G)



Recent fieldwork-based observations in Telangana and Jharkhand show that, given the commitment of the district heads, the policy is more effective and highly impactful in the long run. All the success depends upon this mega project's bureaucratic transparency and accountability. Many sociological interventions are needed throughout the ongoing project implementations and even when SBM finds no funds to sponsor this project.

CONCLUSION

The Lifeworld and health of Sanitation workers are serious concerns that any democratic state must address. The questions and problems the sanitation workers face are merely reflected in the implementation outcomes. However, a solemn promise made in policy shows a differential status. It has been the duty and motivation how state governments responded to this mega project and the efficacy at the district level of governance in the countryside. Such initiatives are noble, but nobility depends upon the people involved in this ongoing project.

This paper helps to understand many perspectives that have been taken on Indian cities and community cleanliness. Indian society has purified human waste for millennia. It maintained caste-based occupation inequities. Many low-caste families, such as the Bhangis, Mehtar, Halalkhor, Hadis, Rellis, and Balmiki, cannot live in dignity (Srivastava, 1997; Shyamlal, 1981, 1992; Ramaswamy, 2005; Sacchinanda, 2002; Ziyauddin, 2016, 2017). Training manual scavengers and using such a significant Indian workforce can quickly overcome the policy challenge.

Industrial or informal workers are unimportant. Manually cleaning sewers and toilets may not help all caste groups. The country has to become a developed nation. All employees must show respect and dignity to be deemed such.

We have examined Smart Infrastructure, Smart Environment, Smart Governance, Smart Workers, and Traditional Workers in a Smart City. Public health concerns and initiatives exist in every corner of the Indian state. Health, hygiene, and sanitation issues necessitate intensive fieldwork (Patel, 1994). It must be supported by many more recent studies to identify the complexities of the lives of those associated with traditional occupations in India. Even after relocating to cities, many have maintained their traditional occupations based on caste and birthplace.

A comprehensive examination of field observations reveals several flaws in the rehabilitation of sanitation workers in modern cities and appropriate solutions for dealing with menial labour to make cities genuinely intelligent and clean. In the context of the Indian government's ongoing smart city mission as a national strategy, the state's involvement is crucial and requires additional emphasis.

There is no lack of argumentation, and this note is by no means exhaustive. However, there is still ample space for diverse perspectives and knowledge fusion to clarify the health, hygiene, and sanitation issue, which could potentially solve India's urban and rural life crisis, especially for India's stakeholders. This debate and topic necessitate research from a variety of social science disciplines. Health, sanitation, and the lives of Indians, whose traditional occupation entails cleaning manholes, sewers, and restrooms, must be investigated as intertwined strands. Otherwise, it will not be easy to comprehend the current Clean India Mission policies.

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HARNESSING AI AND BIG DATA IN PUBLIC ADMINISTRATION: A CATALYST FOR ACCELERATING SUSTAINABLE DEVELOPMENT

Zeba Fatima*

Abstract

The collaboration of Artificial Intelligence (AI) and Big Data in public administration offers a transformative approach to achieving the Sustainable Development Goals (SDGs). These technologies provide innovative solutions to address complex global challenges such as poverty, inequality, and climate change. Public administration faces increasing demands for transparency, efficiency, and evidence-based policymaking to fulfill the SDGs. AI facilitates predictive analytics and automation, while Big Data enables real-time monitoring and insights into social, economic, and environmental progress. As such, it becomes an imperative to examine the role of these technologies in enhance governance, optimizing resource allocation, and promote inclusivity, thereby accelerating global efforts toward sustainable development. Thus the primary objective of the present paper to explore how AI and Big Data can revolutionize public administration to expedite the achievement of Sustainable Development Goals (SDGs). It aims to address the following key issues: efficiency and transparency in governance, specific SDG conducive AI and Big Data, practices and policy framework to ensure ethical and equitable use and risks involved. It is found that AI and Big Data play a critical role in enhancing public administration efficiency, particularly in tracking and monitoring SDG progress. It is suggestible that governments must invest in digital infrastructure and address ethical issues to realize their full potential and strengthen data governance. Future research should investigate scalable implementation models and assess the long-term impact on SDG outcomes, especially in developing nations.

Keywords: Artificial Intelligence (AI), Big Data, Sustainable Development Goals (SDGs), Public Administration.

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INTRODUCTION

Background of the study: We are now a quarter into the 21st century, and it is almost impossible to envision a world without mobile phones and laptops. Technology has become integral to our daily lives, shaping how we live, work, and interact. In this era, information serves as the new fuel driving business innovation, while private administration is undergoing rapid transformation to deliver more efficient and client-focused services. These days, big data is one of the most crucial areas of emerging technology, and the public system is taking notice of its revival.

Statement of the problem: Public administration, despite its vast and intricate structure, continues to be associated with delays, corruption, and bureaucratic inefficiencies. While governments have begun digitizing services through applications, chatbots, and other technologies, they remain far from fully harnessing the transformative potential of AI and Big Data to achieve optimal efficiency and effectiveness.

This paper highlighted the advantages of digitalizing government systems, the developmental gaps that need to be addressed, and the potential risks associated with integrating technology and AI into public administration. The study focuses on understanding the transformative impact of AI and Big Data while evaluating the challenges and ethical considerations involved. Specifically, the research seeks to address the following questions:

1. How can AI and Big Data enhance the efficiency and transparency of governance processes?
2. What specific Sustainable Development Goal (SDG) targets can be effectively advanced using these technologies?
3. What challenges and risks are associated with integrating AI and Big Data in public administration?
4. What best practices and policy frameworks are necessary to ensure the ethical and equitable use of technologies in sustainable development?

Through these inquiries, the study hypothesizes that merging AI and Big Data might considerably increase the efficiency, transparency, and effect of public administration, given that strong ethical principles and legislative frameworks to achieve the Sustainable Development Goals.

Objectives of the Study: To analyze the implementation of AI and Big Data across various models in public administration. It aims to explore methods and opportunities for leveraging these technologies to enhance policymaking, improve service delivery, and advance the attainment of Sustainable Development Goals (SDGs)

Significance of the Study: This study addresses a critical need to develop an efficient public service delivery system that benefits both the nation and its citizens.

By exploring the potential of AI and Big Data in public administration, the research aims to build a more effective, transparent, and responsive governance framework, ultimately enhancing societal well-being and driving sustainable development.

Artificial Intelligence (AI): Artificial intelligence is “a technical and scientific field devoted to the engineered system that generates outputs such as content forecasts, recommendations or decisions for a given set of human-defined objectives”. (International Organization for Standardization, 2024). Additionally, it has been noted that AI presents the public sector with numerous potentials. Elements like enhanced citizen-government communication, more accurate forecasting and decision-making, individualized public services, and less administrative work for achieving Sustainable Development Goals. (Neumann et al., 2022)

Big Data: The phrase refers to ideas, such as the technological capacity to store, compile, and process data as well as the cultural change that is engulfing society and industry in an abundance of information. (De Mauro et al., 2015). Big Data (BD) is a term used to describe complicated data sets that contain vast amounts of information. Because BD differs from conventional data sets, managing it calls for specialized processing. From data collection to the end findings, BD encounters numerous obstacles. It impacts people’s lives and is considered the most important subject grasped and utilized to its fullest extent. (Basim Alwan & Ku-Mahamud, 2020)

Sustainable Development Goals: The United Nations (UN) established the Sustainable Development Goals (SDGs) in 2015 as part of the 2030 Agenda for Sustainable Development, serving as a global call to action. These goals address critical global challenges such as poverty, inequality, climate change, environmental degradation, peace, and justice. The SDGs consist of 17 interconnected objectives to foster sustainable economic growth, social inclusion, and environmental protection for a better and equitable future. (United Nations, 2015)



Figure 1: (Chen et al., 2015)

LITERATURE REVIEW

A systematic literature review to discover factors driving AI acceptance and spread.

USE OF AI AND BIG DATA IN PUBLIC ADMINISTRATION – BACKGROUND AND RECENT TRENDS

Extensive studies have been conducted on AI, Big Data and sustainable development in various references, a few of them discussed as follow.

Digital transformation is now a must rather than an option. 53 percent of businesses have enterprise-wide digital transformation plans, per research by the International Data Corporation (IDC). (Gibson, 2024) . Many governments have begun integrating AI and Big Data into their digital transformation strategies to improve public service delivery. For example, Estonia's e-government system leverages AI for automated services, such as tax filings and digital identity management. It is noteworthy that Estonia has taken a novel approach to secure digital governance, showing how countries can match digital plans with the Sustainable Development Goals (SDGs). Because government services are being rapidly digitized, the eDiscovery ecosystem must navigate increasingly complicated and huge volumes of data, making safe, transparent, and compliant technologies more important than ever. (Robinson, 2024).

AI and Big Data are increasingly used in public health for predictive modeling of disease outbreaks, resource allocation, and personalized healthcare services. During the COVID-19 pandemic, countries like Germany; Singapore, China, Sweden; Taiwan, USA, and South Korea utilized Big Data to track infection patterns and manage quarantine efforts (Whitelaw et al., 2020).

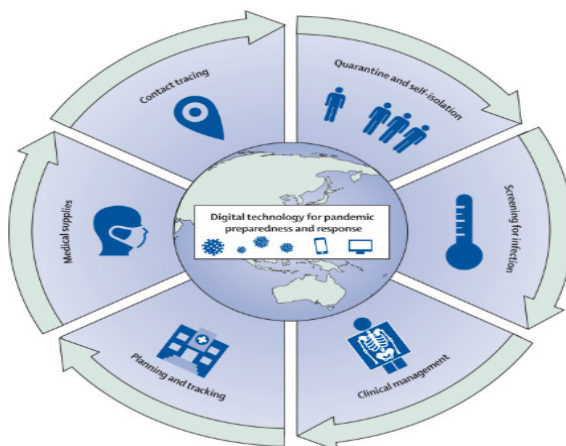


Figure 2: (Whitelaw et al., 2020)

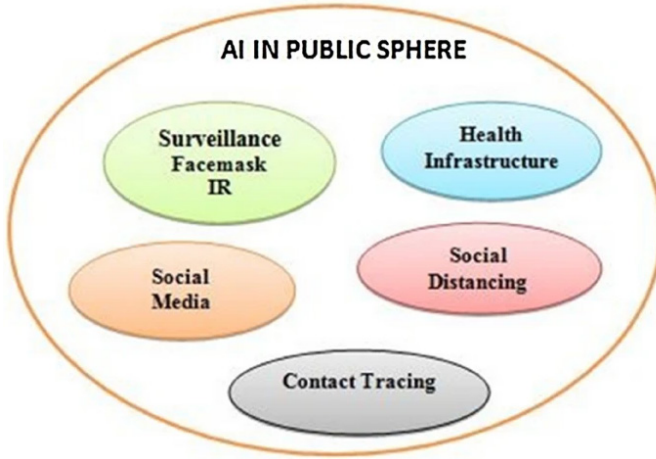


Figure 3: Taeihagh, 2021.

As in the United States, organizations in the EU using AI in health care must adhere to the GDPR's (General Data Protection Regulation) core principles by ensuring that they have adequate security measures in place to protect personal data, a legal contract that proves there is a lawful basis for processing personal data, and notify authorities in the event of a breach. The GDPR also imposes constraints on automated decision-making and, similar to many other countries. China is another country that is emerging as a global leader in artificial intelligence. China's administration has correspondingly implemented many policies that restrict AI growth and operations (for example, the Chinese Cybersecurity Law and the New Generation AI Development Plan). Several international organizations' (for example, the United Nations and the Organization for Economic Cooperation and Development) have been developing worldwide rules to help regulate AI. Their efforts emphasize the significance of international cooperation, universal standardization of methodologies and rules, and the use of AI to realize global benefits and sustainability. (Pantanowitz et al., 2024; PricewaterhouseCoopers, 2024)

CURRENT LEVELS OF ADOPTION

- **Urban Planning:** AI-powered predictive models are utilized for traffic management and smart city projects, improving resource allocation and reducing carbon emissions. (*Doe v. Lee, 3:23-Cv-00592|Casetext Search + Citorator, 2023*).
- **Public Health:** Big Data analytics aids in tracking disease outbreaks and optimizing healthcare delivery (Brown et al., 2021).

- **Environmental Monitoring:** AI-driven systems support real-time monitoring of air quality, deforestation, and water resources, contributing to sustainable environmental management. The use of Artificial Intelligence (AI) in environmental monitoring provides precise disaster forecasting, pollutant source detection, and comprehensive air and water quality measurement. (Alotaibi & Nassif, 2024)

CASE STUDIES

- **India's AI for All Initiative:** Demonstrated how AI and Big Data were used to improve water resource management in drought-prone regions. (Hesam Kamyab et al., 2023)
- **Estonia's e-Government System:** Showcased the integration of AI for delivering efficient public services. (Hesam Kamyab et al., 2023)
- **Kenya's AI in Healthcare:** Highlighted AI-driven predictive analytics in combating infectious diseases like malaria. (Nyakiongora, 2024)

The research reveals varying levels of AI and Big Data adoption across different regions and sectors of public administration. Developed countries demonstrate higher adoption rates, particularly in urban planning, public health, and environmental monitoring. Developing countries show promising initiatives but face challenges such as limited infrastructure and expertise (Herath & Mittal, 2022).

However, significant gaps remain in understanding the practical integration of these technologies in diverse administrative contexts. Limited research exists on data privacy challenges, ethical governance, and disparities in technology access, particularly in low-resource settings. Furthermore, studies often lack comprehensive frameworks for evaluating the long-term impact of AI and Big Data on sustainability goals. This research aims to bridge these gaps, providing actionable insights for effectively leveraging technology in public administration.

METHODOLOGY

This study adopts a mixed-methods research design to thoroughly explore AI and Big Data in public administration and its potential to accelerate sustainable development. The quantitative aspect involves analyzing secondary data from case studies, government reports, and public datasets to evaluate the application and outcomes of these technologies. The qualitative component incorporates semi-structured interviews with policymakers, data scientists, and public administrators to get the idea of the implementation challenges and opportunities associated with these technologies in the public sector to explore their vision for an AI-driven public administration environment and the specific functionalities they consider

essential. Group discussions are organized to facilitate collective brainstorming and gather diverse perspectives on AI integration in their work processes.

RESULTS

Literature that is relevant to individual SDGs acts as the first link between AI and Big Data. At the same time, the SDGs focus on new areas for empirical research (including transdisciplinary studies) while also encouraging innovation in accounting theoretical frameworks. Furthermore, the SDGs provide a backdrop for (re)energizing accounting's contribution to sustainable development debates about the benefits and drawbacks of artificial intelligence.

Adoption and Application of AI and Big Data in Public Administration (Role of AI and Big Data in Governance)

AI and Big Data play a transformative role in enhancing the efficiency and transparency of governance processes through the following mechanisms:

1. **Improved Decision-Making:** AI-powered predictive analytics help governments anticipate trends and challenges, enabling proactive policy formulation. For instance, Big Data analytics in healthcare can identify disease outbreaks, allowing timely interventions.
2. **Streamlined Service Delivery:** Automation through AI reduces manual errors and processing time, making public services more efficient. Chatbots and AI-driven portals provide instant responses to citizen queries, enhancing user experience.
3. **Enhanced Transparency:** Big Data enables real-time monitoring of public projects and expenditures, reducing opportunities for corruption. Governments can use AI to analyze patterns in public spending and identify anomalies.
4. **Data-Driven Policy Formulation:** Big Data provides insights from diverse datasets, helping policymakers design evidence-based policies that address real needs.

(Mergel et al., 2019)

Sustainable Development Goal (SDG) targets using AI and Big Data.

How AI and Big Data Help in Achieving SDGs through Policy and Program Development

AI and Big Data offer transformative tools for developing, implementing, and monitoring policies and initiatives targeted at meeting the Sustainable Development Goals (SDG). The following is an analysis of how they contribute to specific aspects of human growth and welfare.

HUMAN DEVELOPMENT AND WELFARE (SDG 1: NO POVERTY)

Role of AI and Big Data

AI identifies vulnerable populations through predictive analytics, enabling targeted welfare programs. Big Data analyzes socioeconomic patterns to optimize resource allocation and measure program impacts.

Example: AI-based platforms, such as Brazil's Bolsa Família social protection system, improve welfare benefit identification and delivery. (Fabio Veras Soares et al., 2008)

HEALTH (SDG 3: GOOD HEALTH AND WELL-BEING)

Role of AI and Big Data

AI enhances disease prediction, outbreak detection, and personalized healthcare. Big Data integrates medical records for real-time monitoring and decision-making.

Example: During the COVID-19 pandemic, AI and Big Data were used in South Korea to track cases and optimize healthcare resource allocation (Whitelaw et al., 2020).

EDUCATION (SDG 4: QUALITY EDUCATION)

Role of AI and Big Data

AI personalizes learning experiences and identifies gaps in education systems. Big Data tracks student performance trends, helping policymakers improve access and quality.

Examples of AI in Education Platforms

AI-driven platforms like Google Classroom, Duolingo, Coursera, and Squirrel AI are transforming education through personalized learning and automation. Google Classroom streamlines tasks and recommends resources. Duolingo adapts lessons and provides real-time feedback. Coursera curates personalized courses, while Squirrel AI analyzes learner needs for tailored content and progress tracking. (AI, 2024)

GENDER EQUALITY (SDG 5)

Role of AI and Big Data

AI analyzes gender-disaggregated data to highlight inequalities in access to resources and opportunities. Big Data monitors gender-based violence trends and informs targeted interventions.

Example: UN Women uses AI and Big Data to identify gender gaps in employment and education globally.

AI supports inclusion by minimizing biases in talent management, enabling fairer recruitment and advancement decisions. It delivers personalized skill development through targeted reskilling programs and immersive learning experiences using AI and VR, like PwC's "In My Shoes," which fosters empathy and strengthens inclusive leadership. (PricewaterhouseCoopers, 2024)

ENVIRONMENT PROTECTION (SDG 13: CLIMATE ACTION)

Role of AI and Big Data

AI models predict climate changes, optimize renewable energy use, and mitigate environmental risks. Big Data tracks emissions and deforestation in real time.

Example: AI-driven climate models by Google Earth Engine help in monitoring deforestation and carbon emissions.

PEACE AND JUSTICE (SDG 16)

Role of AI and Big Data

AI improves judicial efficiency and reduces corruption by analyzing legal records and governance data. Big Data tracks crime patterns and informs community-level interventions.

Example: Predictive policing models in the Netherlands use AI to optimize law enforcement deployment (van Brakel, 2016).

CONSERVATION OF NON-RENEWABLE RESOURCES AND ALTERNATIVE DEVELOPMENT (SDG 7: AFFORDABLE AND CLEAN ENERGY)

Role of AI and Big Data

AI predicts energy demand, optimizes resource use, and develops renewable energy systems. Big Data tracks energy consumption and identifies inefficiencies.

Example: AI-driven solutions in India's renewable energy sector enhance solar and wind energy integration into the grid (Dubey et al., 2021).

EQUITABLE DISTRIBUTION OF RESOURCES (SDG 10: REDUCED INEQUALITIES)

Role of AI and Big Data

AI can play a key role in ensuring fair and equal chances for all. By using AI's tremendous capabilities as a bridge across data sets, stakeholders ranging from investors to legislators may make fully informed judgments about formulating plans of action to address inequality on a bigger scale. Investigate the role AI can play in addressing social and economic inequities in today's world.

How AI Can Help Reduce Inequalities

1. AI and Big data Offer targeted support to people who are most in need.
2. Artificial intelligence can generate jobs and opportunities for those who are unemployed or underemployed.
3. Artificial intelligence can help enhance access to education and training.
4. Artificial intelligence can help to improve healthcare services.
5. AI can help to increase social and economic inclusivity.
6. Artificial intelligence can help to improve infrastructure. (*AI's Role in Reducing Inequalities – Quantilus Innovation*, n.d.)

Example: AI-driven poverty maps used by the World Bank identify marginalized communities for targeted interventions.

Education: AI-based platforms like UNICEF's Learning Passport provide quality education to children in remote and underserved areas. (*Initiatives|UNICEF Digital Education*, n.d.)

Food Aid: The World Food Programme (WFP) uses AI and satellite imagery to assess food insecurity and allocate resources to vulnerable communities efficiently. (*Skai|WFP Innovation*, n.d.)

LAND, WATER, SEA, AND FOREST CONSERVATION (SDG 14 AND SDG 15)

Role of AI and Big Data

AI tracks biodiversity and predicts environmental threats. Big Data supports sustainable land use, water management, and marine conservation policies.

Example: Satellite technology and AI have enabled a global map to track industrial fishing fleets in near real time. This accessible online platform revolutionizes marine management by providing scientific insights and monitoring ocean areas with unprecedented precision (*Sustainability through Transparency*, n.d.)

AI and Big Data act as catalysts for sustainable development by enabling evidence-based policymaking and targeted program implementation, thus ensuring efficient and equitable progress across all sectors of human welfare and environmental conservation.

CHALLENGES AND RISKS OF INTEGRATING AI AND BIG DATA IN PUBLIC ADMINISTRATION

Data Privacy Concerns

AI and Big Data rely on vast amounts of personal data, raising privacy concerns. Unauthorized access or misuse of sensitive information can erode public trust and violate data protection laws (*Privacy and Data Protection*, 2024)

Algorithmic Bias

Bias refers to systematic errors that occur throughout decision-making processes, resulting in unfair outcomes. Bias in AI may originate from a variety of sources, including data collecting, algorithm design, and human interpretation. Machine learning models, a form of artificial intelligence system, can learn and repeat patterns of bias in the data used to train them, resulting in unfair or discriminatory outputs. (Ferrara, 2023)

1. **Ethical Dilemmas:** Decisions made by AI may conflict with ethical norms or lack human empathy, posing challenges in areas requiring nuanced judgment. AI's influence on human psychology raises concerns about its impact on relationships, particularly when intelligent robots take on human social responsibilities like nursing. Human-robot connections may have unexpected consequences for human-human relationships. (Bankins & Formosa, 2023).
2. **Digital Divide:** Limited access to AI infrastructure and expertise in developing regions exacerbates inequality and hinders equitable implementation. It holds immense potential for sustainable development but risks widening digital divides. UNCTAD's 2021 report urges inclusive policies to bridge inequalities for equitable technological benefits. (UNCTAD, 2021).
3. **Job Displacement:** Automation in public administration may displace traditional roles, requiring workforce reskilling and creating resistance to technological adoption. (Ram Paudel, 2024).

4. **Cybersecurity Risks:** AI systems are vulnerable to cyberattacks, such as data breaches and adversarial AI manipulation, which can compromise public services. The Department for Science, Innovation, and Technology commissioned Grant Thornton UK LLP and Manchester Metropolitan University to conduct a comprehensive study of the cyber security threats related with AI. This entailed identifying unique vulnerabilities at each stage of the AI lifecycle, distinguishing between software and AI-specific vulnerabilities, and assessing their exploitation and effect. (Department for Science, Innovation & Technology, 2024).
5. **High Implementation Costs:** Developing and maintaining AI systems requires significant investment, which may strain public budgets and exclude small or resource-constrained administrations. (Mun et al., 2020).
6. **Transparency Issues:** Complex AI models lack explainability, making it difficult for stakeholders to understand or challenge decisions, reducing accountability. Regardless of their skill, developers and AI practitioners typically struggle to clearly explain how these systems get their results, especially in key applications such as medical diagnosis, job recruitment, and legal decision-making. (Ali, 2024)
7. **Regulatory Challenges:** The rapid pace of AI advancements often outstrips existing regulatory frameworks, creating gaps in oversight and governance (2024).
8. **Data Quality Limitations:** Data quality issues can result from cross-system inconsistencies and human error. The most prevalent data quality challenges are erroneous data, incomplete data, duplicate information, and ageing data. (Reno, 2022).

DISCUSSION

This paper offers a synthesis of interdisciplinary perspectives on sustainable development, Artificial Intelligence (AI), and Big Data, emphasizing their integration into the context of public administration literature. Additionally, it proposes potential contributions from accounting to support the development of innovative research avenues, fostering a deeper understanding and application of these technologies in public governance and sustainable practices.

While data analysis and prediction are the main functions of AI systems, generative AI goes one step further by producing new data comparable to its training data.

Despite their potential, implementation faces ethical and operational challenges, including data privacy concerns, lack of regulatory frameworks, and disparities in access to technology

KEY FINDINGS

Improved Decision-Making: AI models enhance predictive capabilities, allowing governments to anticipate crises like pandemics, natural disasters, and economic downturns.

Optimized Resource Allocation: Big Data analytics ensures more efficient use of resources in areas like urban planning, healthcare, and energy management.

Enhanced Transparency and Accountability: AI tools enable better monitoring of public projects, reducing corruption and increasing public trust.

Challenges: Implementation barriers include data privacy concerns, skill gaps, and unequal access to technology.

Ethical Implications: The paper emphasizes the need for frameworks that address biases in AI algorithms and ensure the ethical use of data.

CONCLUSION

Summary of the Research Findings

Existing research highlights the transformative potential of Artificial Intelligence (AI) and Big Data in public administration, emphasizing their role in optimizing decision-making, enhancing public service delivery, and promoting sustainable development. Key studies demonstrate the use of AI in predictive modeling, resource allocation, and real-time monitoring, while Big Data analytics supports data-driven policymaking and improves transparency. Theories of technological determinism and socio-technical systems underscore how technology shapes governance processes and societal outcomes.

Contribution

The article explores how AI and Big Data transform public administration by improving governance efficiency, transparency, and service delivery. It highlights their potential in achieving Sustainable Development Goals (SDGs) through data-driven policymaking and resource optimization.

Limitation

The article lacks empirical evidence on long-term impacts, focusing primarily on theoretical benefits. It underemphasizes challenges like data privacy, algorithmic bias, and resource disparities, which may hinder the equitable adoption of AI and Big Data solutions. This study is limited by secondary data and a literature

evaluation. Existing studies may not fully capture recent developments or sector-specific AI adoption.

Although AI applications have the potential to benefit society, they can also have unanticipated and unintended repercussions and present new risks that governments must successfully control. As AI programs gain knowledge from data in systems may exhibit unexpected behaviors that endanger user safety in addition to preprogrammed rules, scenarios that the system has not been taught to manage, and uncertainties in human-machine interactions.

Recommendations

Acquiring AI in Life raises several challenges, including safety, security, ethical biases, accountability, trust, economic impact, and environmental consequences. Effective regulation can help to reduce these hazards, promote justice, establish standards, and push for more sustainable AI activities. Regulating AI technologies assures their safe and effective use but builds public trust. Rules must stay flexible to accommodate quick improvements in this industry to foster innovation without adding additional load to some of our previous and well-established frameworks.

AI has capacity to improve economic efficiency and quality of life, but it also presents new threats that must be handled with unexpected and unintended repercussions. Governments everywhere must better grasp the breadth and depth of the hazards posed by AI to maximize its positive effects while avoiding its negative ones. They must also create regulatory and governance frameworks and procedures to deal with these issues.

Recommendations for Future Research

Develop global partnerships for sharing best practices and technologies.

Invest in AI literacy programs for public administrators.

Establish robust data governance frameworks to protect citizens' rights.

Integrate AI solutions with local and traditional knowledge systems.

Proposed Framework for Implementation

Qualitative interviews reveal that public administrators view AI and Big Data as essential tools for modernization but stress the need for capacity-building and ethical guidelines. Policymakers emphasize the role of cross-sector collaboration in maximizing benefits

Based on the findings, a framework is proposed to guide the integration of AI and big data in public administration. It includes:

- **Policy Development:** Establishing ethical guidelines and regulatory frameworks.
- **Capacity Building:** Training for public administrators and technologists.
- **Infrastructure Investment:** Developing robust data storage and processing systems. (Pencheva et al., 2018)

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INTEGRATION OF TECHNOLOGY IN EDUCATION AND ACHIEVEMENT OF SUSTAINABLE DEVELOPMENT GOAL 4 IN INDIA

Jeevan Kumar Cheruku* and Gautam Jha**

Abstract

The adoption of digital technologies across various sectors has emerged as a significant contemporary phenomenon. These technologies build human capabilities and facilitate the achievement of the Sustainable Development Goals (SDGs). This paper argues that digital technologies are crucial in realizing Goal 4 by making education accessible, affordable, and equitable. It analyzes the Government of India's initiatives to promote digital education, particularly through the Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM) platform. Additionally, the paper identifies obstacles to the effective implementation of SDG 4. The analysis is based on secondary data from various sources, including books, articles, and reports produced by national and international organizations such as the Government of India, the United Nations Development Programme (UNDP), and the Commonwealth. The findings indicate that SWAYAM has transformed education by enhancing access, affordability, and equity. However, challenges such as the digital divide, inadequate infrastructure, and the length of courses hinder the implementation of SDG 4 and necessitate government attention.

INTRODUCTION

Sustainable development has emerged as a central goal of global policy in recent years. In 2015, 193 member countries of the United Nations (UN) pledged their commitment to transforming the world by 2030 during the UN Sustainable Development Summit held in New York. This dedication resulted in the adoption of 17 Sustainable Development Goals (SDGs), which address critical issues such as poverty, inequality, climate change, and the promotion of good health, justice, and prosperity for all people.

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There is a growing recognition that education is integral to sustainable development, as reflected in SDG 4. This goal focuses on providing inclusive and equitable quality education while promoting lifelong learning opportunities for all. Quality education is essential for achieving the broader objectives outlined in the SDG Implementation Agenda (United Nations Development Programme, n.d). The implementation of the SDGs is designed to be inclusive, guided by the principle of “Leave No One Behind.” SDG 4 relies heavily on governments to shape public policies and design programs that support these efforts.

This paper is organized into three sections. The first section provides a framework for education to achieve sustainable development. It also explains how technology contributes to human development by enhancing individual capabilities. The last section examines the barriers to the integration of technologies in education that obstruct the achievement of SDG4.

EDUCATION FOR SUSTAINABLE DEVELOPMENT

Education catalyzes social change and is a powerful lever for socio-economic and political transformation. An educated individual is equipped to defend against discrimination and inequalities related to caste, class, gender, and literacy. Education provides citizens with the necessary tools to actively participate in governance and democracy. For disadvantaged groups, higher literacy rates and educational achievements enhance their capacity to resist oppression, organize politically, and negotiate fairer outcomes (Dreze & Sen, 2005). Emphasizing the role of education in enhancing individual capabilities, Sen (2003) argued that governments must work to bridge gaps in access, inclusion, and achievement.

The concept of sustainable development traces back to the UN Commission’s report led by Gro Harlem Brundtland, the former Prime Minister of Norway. According to this report, sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN, 1987). The Brundtland Report identified 17 Sustainable Development Goals with 169 targets to be achieved by 2030. The SDGs can be summarized as follows: -

- SDG 1: No Poverty
- SDG 2: Zero hunger
- SDG 3: Good health and well-being
- SDG 4: Quality education
- SDG 5: Gender equality
- SDG 6: Clean water and sanitation
- SDG 7: Affordable and clean energy
- SDG 8: Decent work and economic growth

- SDG 9: Industry, innovation and infrastructure
- SDG 10: Reduced inequalities
- SDG 11: Sustainable cities and communities
- SDG 12: Responsible consumption and production
- SDG 13: Climate action
- SDG 14: Life below water
- SDG 15: Life on land
- SDG 16: Peace, justice, and strong institutions
- SDG 17: Partnerships for the goals (Venturelli & Mio, 2024).

During the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992, the crucial role of education in achieving sustainable development was recognized. SDG4 consists of 10 targets, including one focused on “education for sustainable development.” This target emphasizes that educated citizens can acquire the knowledge and skills necessary to promote sustainable development, human rights, gender equality, and peace. The next section examines the role of technologies in building human capabilities.

Technologies for Building Human Capabilities

The relationship between technology and human development is multifaceted (see Figure 1). Technological advancements in communication, for instance, empower individuals to acquire knowledge and foster creativity. This, in turn, enhances productivity and stimulates economic growth. As human capabilities improve, governments are better positioned to invest in the development of new technologies, creating a positive feedback loop that further advances both individual and societal progress.

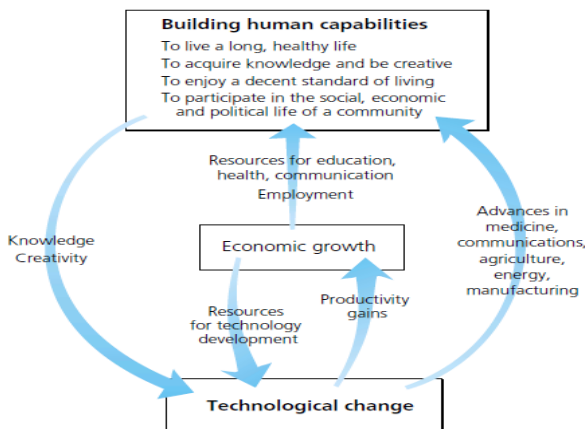


Figure 1: Technologies for Human Development

Source: United Nations Development Programme (2001, p.28)

MOOCs for Sustainable Development

There exists a symbiotic relationship among technology, education, and sustainable development (see Figure 2). The foundational philosophy of Massive Open Online Courses (MOOCs) is rooted in the 3 A's: anytime, anywhere, anyone. MOOCs facilitate sustainable development by enabling learners to share their knowledge, experiences, and perspectives on sustainability through online platforms (Commonwealth Educational Media Centre for Asia, 2022, p. 26). This inclusivity fosters a diverse exchange of ideas, contributing to a broader understanding and implementation of sustainable development practices.

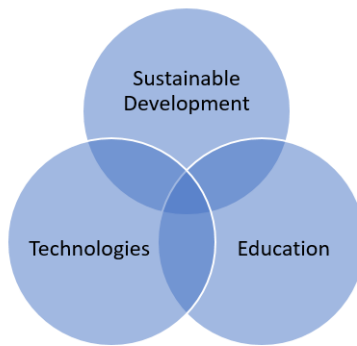


Figure 2: Relation between technologies, sustainable development and education

Source: Authors

The next section analyses the Government of India's efforts in integrating technology in education.

GOVERNMENT OF INDIA'S INITIATIVES IN DIGITAL EDUCATION

The Government of India (GoI) has made significant efforts to provide quality education for all, ensuring access and equity by leveraging technology. One notable initiative is the integrated platform called Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM). SWAYAM is currently the fifth-largest provider of online education in the world, with a total of 5.1 crore enrolments so far. Teachers create e-content and make teaching and learning resources available to everyone on this platform. The courses are produced in collaboration with top universities and institutes, such as Indira Gandhi National Open University (IGNOU), All India Council for Technical Education (AICTE), and Indian Institute of Management (IIMs). Importantly, the content is made available to students free of charge.

The New Education Policy (NEP) 2020 advocates for the integration of technology in education to achieve three core principles: access, equity, and quality

(Government of India, 2020). SWAYAM aims to take advantage of the digital revolution to bridge the digital divide and address various disparities, including economic (rich/poor), geographic (urban/rural), caste, religion-based, and regional disparities (University Grants Commission, 2018). Let's examine how technology integration and innovations in education contribute to achieving Sustainable Development Goal 4 (SDG 4).

Affordability

Courses on SWAYAM are offered free of charge, making them particularly beneficial for students, especially at a time when the cost of education in India is rising. Often, seats in government colleges are limited, forcing students to enrol in private colleges, which generally have higher tuition fees. According to the 2019 National Sample Survey (NSS), the average expenditure for studying medicine would cost Indian Rupee (INR) 31,309 in government institutions. In contrast to this, the same medicine course would cost INR 94,658 in private aided and INR 101,154 in private unaided institutions in a single academic year. For engineering students, the average cost of education was INR 39,165 at a government institution, whereas it was much higher at INR 66,272 and INR 69,155 for private aided and unaided institutions, respectively (Iftikhar, F., 2024). Online courses can supplement and fill the learning gaps by providing access to rich educational content. To address fee disparities, the government could consider options for students to attend certain classes online. This would make education more affordable and reduce travel costs to institutions, thereby providing relief to students.

Access

Access refers to the opportunities educational institutions provide to students, regardless of their socioeconomic background, gender, region, or culture (Great School Partnerships, n.d). It is well-known that seats in government institutions are limited. Moreover, high fees in private educational institutions can make education inaccessible to many deserving students, particularly those from marginalized backgrounds. Digital technologies offer a viable solution to this accessibility issue. Students can pay less for education and overcome geographic obstacles. With the SWAYAM platform, students can access lessons from anywhere, and working professionals can also enrol in these courses. A recent survey by the Ministry of Education (MoE) revealed that between the January and July 2021 sessions of the SWAYAM portal, three crore students registered for various courses, with 11.3 lakh students receiving certificates (Hemanth, A., 2022).

Equity

Equity in education involves providing students with the resources and opportunities they need to learn, while also catering to their specific requirements to help them realize their full potential. During the COVID-19 lockdown, MOOCs played a crucial role in allowing students to continue learning and access reading materials despite various challenges. Online resources ensured that even marginalized students could access educational materials without discrimination, fostering a more equitable learning environment.

CHALLENGES TO INTEGRATION OF DIGITAL TOOLS IN LEARNING

Despite government efforts, Higher Education Institutions face several challenges in integrating technology into education:

Course Length and Attention Span

While many MOOC courses are self-paced, learners often have limited attention spans when studying on screen. Creating highly interactive lessons can be challenging, and it takes time to promote e-learning effectively. Additionally, some teachers may resist adopting e-learning due to a lack of innovative thinking, perceiving it to be more difficult than traditional classroom learning.

Technological Barriers

Low internet speed and limited transmission capacity can impede the promotion of digital learning. The government may struggle to provide affordable online education. Transitioning students from private to government schools may present additional challenges, particularly in accommodating these new students (Imran, 2012).

Digital Divide

It is concerning that half of primary schools worldwide lack computers, internet access, and facilities for children's use, including those with disabilities. The situation is particularly severe in Least Developed Countries (LDCs), where disparities exist in access to school education and enrolment based on gender and urban/rural location (UN, 2022). In India, social disparities hinder access to online education; for instance, women are often expected to perform household chores instead of attending online classes, while boys frequently work on family farmlands. Moreover, male family members typically control devices like TVs and computers, limiting access for female students. Marginalized communities face even greater difficulties

in accessing online education. In urban areas, 42% of families have internet access, compared to just 15% in rural areas¹.

DIGITAL INFRASTRUCTURE

Many families lack the necessary infrastructure, such as computers and a reliable internet connection. In India, 70% of the population has poor or no connectivity to digital services. Internet connectivity increased from 24% of households in 2017-18 to 31% by 2022 (Oxfam, 2022, p.19). Providing every household with personal computers and broadband connectivity could help bridge this gap.

CONCLUSION

The adoption and integration of digital technologies are widely prevalent. This paper emphasizes that digital technologies enhance human capabilities and play a crucial role in achieving the Sustainable Development Goals (SDGs), particularly in the education sector. They contribute to realizing Goal 4 by making education accessible, affordable, and equitable. The Government of India's initiatives to promote digital education are commendable. This paper examines the role of the Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM) in implementing SDG4. While SWAYAM has transformed education by increasing accessibility and affordability, there are still challenges that hinder the full realization of this goal. Issues such as the digital divide, inadequate infrastructure, and technological barriers require government attention to effectively implement SDG4.

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ENVIRONMENTAL CONCERNS IN URBANIZATION AND SUSTAINABLE DEVELOPMENT: A FOCUS ON INDIAN CITIES

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Abstract

Urbanization is a transformative process closely linked to industrialization, economic growth, and modernization, particularly in developing nations like India. It involves a demographic shift from rural to urban areas and a change in dominant livelihoods from agriculture to industrial and service-oriented employment. While this has led to the development of cities, it has also brought about several serious environmental challenges. The uneven growth of urban areas, along with the large number of people migrating to cities, has made problems like pollution, waste management, depletion of natural resources, and poor infrastructure more severe. As cities continue to expand, it has become increasingly important to focus on sustainable development. Sustainable development is about finding ways to grow cities while protecting the environment, ensuring social fairness, and promoting long-term economic prosperity. Without sustainable practices, the rapid urbanization could lead to further harm to the environment and quality of life for city dwellers. As such The present paper examines the environmental problems that cities, particularly in India, face due to rapid urbanization. It also looks at the steps that policymakers are taking to address these challenges. The importance of adopting sustainable development practices in city planning is highlighted, as it can help cities grow in a balanced and resilient way. By focusing on sustainability, cities can ensure that their growth does not come at the expense of the environment or the well-being of future generations.

Keywords: Urbanization, Environmental Problems, Sustainable Development, India, City Planning

INTRODUCTION

Urbanization has become a highly significant process with the rise of industrialization and globalization in the modern world. It is a universal phenomenon that is closely

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linked to economic development and the industrial revolution within societies and nations. Urbanization is the process of people migrating from rural areas (villages) to urban areas (towns and cities). This trend has been ongoing for centuries, but it has accelerated significantly in recent decades. The United Nations recognizes urbanization as one of the four major demographic megatrends, along with population growth, ageing, and international migration. (Nawaz and Archna, 2024). Indian cities have seen the unprecedented population growth, migration of the people from the rural village to urban cities. Urbanization is an index of transformation from traditional rural economy to urban industrialized economy (Datta, 2006)). It is a product of growing population and poverty induced rural and urban migration. It is occurring not due to urban pull but rural push. According to Britannica Urbanization is a process by which large number of people becomes permanently concentrated in relatively small areas, forming the cities.

Urbanization is not a product. It is process through which people leave the rural areas agricultural village and start their life in the city and town dominated by industrial and service sector. In a very broader sense people leave rural based agriculture profession and adopt non agriculture based profession in the urban areas (Misra,1998). Urbanization is not only the modern industrial phenomenon but also it was seen the ancient time when man started cultivation and start living in the semi-permanent human settlement near the river and valley in the different parts of the world where the land was fertile. But the contemporary urbanization has a different feature of urbanization. Urbanization and urban growth is not same across the world. The pattern of urbanization varies from the developing to the developed countries. The level of urbanization is less and growing rapidly in the developing country but the infrastructure is not according to the need of the urbanization. Other side in the developed world urbanization has reached at the saturation level (Nawaz &Archna 2024).

Urbanization is a multifaceted process and have a complex socio - economic process convert rural into urban settlement, population move rural to urban. People change dominant lifestyle and occupation like agriculture to service and industry. Economic activities and innovations share are increasing in and these are concentrated in the cities. Across the globe in the urban areas more people are living compare to urban areas. In the 2018, 55 per cent population of the world are residing in the urban areas, while in 1950, 30 percent population of the world were living in the urban areas. It is expected that by the 2050 world 68 per cent population will reside in the urban areas (World Urbanization Prospects, 2018) In general urbanization has a positive for the poverty reduction, economic growth and human development. It is the areas which is considered the hub of development. In the cities and towns educated class labour force and concentration of business and industries are seen at a large scale. People of the town and cities

are more educated. Urbanization in Indian cities has led to serious environmental challenges, especially air pollution and environmental degradation. Rapid growth in population, increased vehicular traffic, industrial activities, and large-scale construction projects have significantly worsened air quality. As cities expand, the demand for infrastructure and transportation grows, leading to higher emissions of harmful pollutants.

One of the most alarming indicators of this issue is reflected in the World Air Quality Report 2023, which reveals that 9 out of the 10 most polluted cities globally are in India. This highlights the urgent need for effective pollution control measures and sustainable urban planning. Poor air quality not only harms the environment but also severely impacts public health, contributing to respiratory diseases and reducing life expectancy. The environmental degradation caused by urbanization also affects natural resources, green spaces, and the overall ecological balance in cities. Without immediate intervention, these challenges may worsen, making urban areas increasingly unlivable. To address this, Indian cities need to adopt cleaner technologies, promote public transport, enforce stricter pollution control regulations, and increase green cover. Sustainable urban development is essential to protect both the environment and the health of millions living in urban India.

URBANIZATION IN INDIA

India is one of the most populated country of the world and the country has a second largest urban system of the world. (United Nations, 2022). Urban population in the states vary from state to state in the country. Economically advanced states have a high level of urbanization with many big cities compare to economically less states have a low level of urbanization and comparatively low growth (Nawaz & Roy, 2024). According to the Census of India urban place has been classified in two fold, these are statutory towns and census towns the area having a municipalities corporation cantonment board, notified town area committee etc are known the statutory town. For the Census town following criteria are a) A minimum population 5000, b) at least 75 % working population male engage in non-agricultural activities c) population density at least 400 person per square kilometer.

India is one of the major emerging country of the world which has a long history of urbanization. Town and the city's population are growing fast as reflects in the below mentioned table According to 2011 census Urban population in India is relatively low and share of the urban population is.

Table 1: Size and Growth of Urban Population in India, 1901–2011

Year	Urban Population (Million)	Absolute Change (Million)	% of Urban Population	% Change in Urban Population	% Change in Rural Population
1901	25.9	–	10.8	–	–
1911	25.9	0.1	10.3	0.4	6.4
1921	28.1	2.1	11.2	8.4	-1.3
1931	33.5	5.4	12.0	19.1	10.0
1941	44.2	10.7	13.9	32.0	11.8
1951	62.4	18.3	17.3	41.4	8.8
1961	78.9	16.5	18.0	26.4	20.6
1971	109.1	30.2	18.2	38.2	21.9
1981	157.7	48.6	23.3	44.5	19.3
1991	215.8	58.1	25.7	36.8	19.7
2001	286.1	70.3	27.8	32.6	18.3
2011	377.1	91.0	31.2	31.8	12.3

Source: Based on Census data from 1901 to 2011. (Shaban et.al, 2010) *Note: Some computed values may not appear exact due to rounding.*

In 1901 urban population was around 25.9 million. Urban population of India reached 377.1 million in the 2011, 31.2 % population living in the urban areas. Urbanization has multifaceted dimensions and it is closely related to three dimension of sustainable development such as economic, social and environment (World Urbanization Prospects 2018). Well managed urbanization in the long run may be highly beneficial and it is expected that in the future and up to 2050. Minimizing environmental degradation and adverse impact on city dwellers especially in the low income countries is expected to 2050. Some of the mega cities of India like Delhi, Mumbai, Kolkata, Begaluru, Hyderabad and others of has huge population crossing 10 millions of the population. These cities are crowded and busy all the time, these have attracted the people of job and better living standard because at a large levels resources availability are seen in these cities.

Rapid and unplanned growth has presented the various environmental challenges to both the people and policy makers. Due to the population growth and inadequate infrastructure, Indian cities faces various environmental issues such as air pollution, water pollution, deforestation and loss of biodiversity, urban waste disposal and others. These are the serious environmental issues that the cities of India faces in the 21st century. Thus the sustainable development in the cities and the urabn araes has emerged one of the major environmental need for the contemporary society. These issues and challenges have been properly addressed in the sustainable developmental goal.

ENVIRONMENTAL CONCERN IN THE CITIES

Cities are now seen as an integral part of the global system p.6, Cities and Urbanization has a long and significant relationship. Cities are now deeply rooted at the center of development debate owing to the greater appreciation of the positive nature and benefits that accompany planned urbanization

Environmental concern is one of the biggest concern not only for India but for the world. Environment is a very broader terms and have a wider concerns across the world. It is not limited to the particular society. Literally, it has been defined “as the sum total of all conditions and influences that effect the development and the life of organism (Khoishoo, 2008)” Environment has not been static. It has been changing in equilibrium (Rangrajan, 2007). Since ancient environmental concern was the issues and challenges almost in every society.

In the contemporary time environmental questions are more crucial today and these are debated almost every society. Major environmental issues in the present time are resource depletion, loss of biodiversity, climate change, pollution, deforestation. Several policies initiative have taken from the government to make environment healthy and human friendly. After Stockhom declaration many critical policies and programs have been made the government time to time to make environmental situation better. In spite of the several polices programs environmental issues are seen at wider levels. Due to large scale of urbanization across the world environmental degradation is seen at large in the town and the city. In the recent decades due to rapid urbanization and industrialization in India several environmental issues and challenges are facing the people. These are not only impacted the health of the environment but the health of the people. People health are being impacted due to environmental problems. Due to industrialization and large scale urbanization have a widespread contamination of water, air quality is poor especially in the mega cities and towns, deforestation and biodiversity loss across the nation Almost in the major city water crisis are found and the contamination of water are found. The rapid urban growth and increasing poverty and employment not sufficient infrastructure, land access low, environmental degradation are the major challenges for the future (Environment outlook 3, 2002). The poor who live in urban place they are unable to compete for scarce resources and they are unable to protect the harmful environmental conditions in the urban place. In adequate waste -collection and the management system are responsible for the serious urban pollution and health hazards especially in the developing conditions.

Air Pollution: Air pollution in India is one of the biggest environmental issues in India. Air quality is not only confined to the cities and mega cities but also spread to village and the small town. India faces severe air pollution. In the Air Quality

Index India has 138 rank that shows that what kind of the country facing the environmental issues. Air pollution is one of the major threat for the people that has directly impact on the health. Due to air pollution some of the people are facing the severe health crisis not only India but across the world. Fresh air is the very much essential for the life of the people in the city or mega city air pollution are affecting the life of the people at large that leads to the severe health crisis. People faces sometime severe and life threatening disease. However, Government of India has taken several initiatives to the air quality in the country, apart from this many stakeholder like Non-Governmental Organization and International organizations are working on the. Despite all the efforts still the air pollution has not much improved and showing the alarming (Kanujia, 2022).

Air pollution in India is very alarming and health of the people are being affected. According to State of India's Environment 2025, the average life expectancy in India shortened by 3 years and 6 months because of air pollution in 2022. The situation of air pollution in National Capital Territory of Delhi is worse, in Delhi life expectancy of the people shortened by 7 years and 9 months due to air pollution in the city. Most of the state capital is also not good their condition is also not good (Pandey, 2025).

SOURCES OF POLLUTION IN INDIA

Water Pollution in India: Water pollution challenge is one of the major significant challenges in the country especially in the urban pale, cities and the mega cities. It has become more severe after the rapid unplanned urbanization and the industrialization in the country. Water pollution are identifies from the two sources such as point source and the nonpoint source. Pollution of the point sources are directly identifiable such as pipe attached to factory, wastage coming from industries, sewage stormy and leakage that affect near surrounding areas. Non point of sources of water pollution are which come from the different sources and the number of ways contaminations enter into surface water and ground water from the non -identifiable sources such as urban waste water, runoff from agriculture field (Singh & Gupta, 2016). Quality of water in India has been effected by mostly are contamination through bacteria, arsenic, fluoride etc and contamination through nitrate, silica, uranium etc. Their presence are identified in the water (Bajpayee et.al, 2019). Data says that very few water bodies have achieved good quality of water in 2023, it is only 10 per cent. Industrial waste Only 37 per cent of India's river water quality were tested in which nearly half of these recorded alarming levels of toxic heavy metals such as arsenic, cadmium, chromium, copper, iron, lead, mercury and nickel. Which shows that at large number of harmful substance are found in the river that is very dangerous and harmful for the people and environment. Pollution free water is the only hope for the healthy life. For a healthy life pure and pollution free water is indispensable.

Urban Waste: Waste in the cities are the major source of environmental problems in the city. Due to rapid and unplanned urbanization, population growth of the cities, and changing pattern of consumption and way of living and consuming by the people. The cities of India produces large scale of waste and due to poor management of waste disposal has become the challenges for the people. Due to production of large amount of waste has become the significant source of environmental degradation that are seen in the major cities of India. Government has taken many initiative to addresses the solid waste management at the national levels Swachh Bharat Mission (SBM) is one of them which was launched in 2014. Under this scheme government aims is to make the city's garbage free by 2026 (Khan, et.al, 2025).

ENERGY CONSUMPTION AND THE URBAN ECOLOGICAL FOOTPRINT

Modern city life uses a large amount of energy, mostly because of the high demand for electricity and fossil fuels. As more people move to cities, this demand keeps growing, creating serious problems for the environment and natural resources. Depending heavily on traditional energy sources adds to greenhouse gas emissions, which worsens climate change. It also puts pressure on limited resources, raising concerns about energy availability in the future. To solve these problems, cities need to shift toward cleaner and more sustainable energy options. This means using renewable sources like solar and wind power and applying energy-saving technologies in buildings, transportation, and public services. It's also important to plan cities in ways that reduce energy use and encourage people to save energy. By making these changes, cities can lower their impact on the environment and become more sustainable places to live for future generations.

RESOURCE DEPLETION

As cities grow rapidly, the demand for essential resources like water and land also increases. This rise in demand leads to serious problems, especially in areas surrounding urban centers. Often, expanding cities take over nearby agricultural lands, which affects farmers' livelihoods and reduces land available for food production. This puts food security at risk. Additionally, cities use large amounts of groundwater, often faster than it can be naturally refilled. Over time, this leads to water shortages and long-term damage to the environment.

THREATS TO BIODIVERSITY AND GREEN SPACES

Urban expansion also poses a serious threat to biodiversity and green spaces. As buildings and roads replace forests, wetlands, and natural areas, many plant and

animal species lose their habitats. This disrupts ecosystems and puts many species at risk of extinction. Inside cities, green spaces like parks are important for people's well-being and for supporting local wildlife. However, they are often lost to make way for new construction. Protecting these spaces and using resources wisely is necessary to ensure a healthy and sustainable future for both people and nature.

SUSTAINABLE SOLUTIONS FOR ENVIRONMENTAL CHALLENGES IN INDIAN CITIES

In a densely populated country like India, urban citizens adopting sustainable lifestyles can greatly influence their communities and surroundings. A study on sustainable consumer behavior showed encouraging results, indicating that people in Tier 1 and Tier 2 cities are more aware of sustainability than those in rural areas. It also found that Indian millennials are particularly conscious of the environmental effects of their consumption choices. This growing awareness among urban populations, especially the youth, reflects a positive shift toward more environmentally responsible living in India's cities. Sustainable city has broadly defined is "one which succeeds in balancing economic, environmental and socio-cultural progress through process of active citizen anticipations (Pallathadka, et.al 2023). The following are the landmarks initiatives which needs an effective implementation for addressing the environmental challenges in Indian cities.

WASTE MANAGEMENT

India faces a growing waste management crisis, driven by rapid urbanization and population growth. The country produces approximately 62 million metric tonnes of waste each year, a number projected to increase significantly. However, waste collection and treatment remain inadequate and only 69% of waste is collected, and a mere 19% of that is treated before disposal (Ahluwalia & Patel, 2018). The rest is left untreated in open-air landfills, where it poses environmental hazards by contaminating the air, soil, and groundwater. The plastic waste problem is especially alarming. With only 8% of plastic waste being recycled, a large volume ends up in rivers, notably the Ganges, which transports significant plastic debris into the ocean. This escalating issue highlights the urgent need for improved waste management systems, sustainable practices, and effective recycling strategies to mitigate environmental damage and support public health in the long term.

SMART CITIES MISSION

It was launched by the Government of India in June 2015, aims to transform urban areas by promoting economic growth, improving quality of life, and enabling

sustainable development through technology. It focuses on both redevelopment of existing areas (Brownfield) and development of new areas (Greenfield) to accommodate growing urban populations. The mission emphasizes inclusive planning, especially for the poor and disadvantaged. A total of 100 cities, including capital cities, industrial hubs, and cultural centers, were selected based on economic strength and urban challenges. The central government allocated ₹48,000 crore, with states expected to match this funding. (Hoelscher, 2016). On the other hand, in annual budget 2024–25, the creation of Transit-Oriented Development (TOD) plans has been announced for 14 major cities with a population of over 3 million. The budget also announces an interest subsidy scheme to provide low-interest loans for urban housing initiatives, along with central assistance of ₹2.2 lakh crore over the next five years for urban housing. (PRS 2025)

URBAN EXPANSION: NEED TO BALANCE

India's urban population doubled between 1990 and 2014, with rapid growth around large cities. Much of this expansion has been unplanned, spreading into peri-urban areas and converting agricultural land into commercial or residential zones, causing environmental degradation. This unstructured sprawl leads to increased road fatalities, pollution, and unsustainable development. (Meera Mehrishi et al., 2011). However, by limiting sprawl through smart urban planning and better transit infrastructure, cities can become more efficient, environmentally friendly, and improve citizens' health, safety, and productivity.

INFRASTRUCTURE DEVELOPMENT NOT AT THE COST OF NATURE

In 2011, less than 50% of small and medium urban households had access to treated tap water, with 27% relying on contaminated groundwater, worsening India's water crisis. Over-extraction, pollution, and poor water management threaten water security (Gadkari & Maheshwari, 2011). A WRI study in Maharashtra showed integrated watershed management increased economic and agricultural benefits. Forests, too, offer critical ecosystem services like water filtration and carbon storage. Investing in natural infrastructure, including tree planting and watershed restoration, is essential for sustainable and resilient urban growth in India.

CLEAN AND GREEN ENERGY

Although 90% of urban India has electricity access, unreliable and low-quality supply especially in smaller cities – remains a challenge. (Mani, 2023). Addressing inefficiencies in the energy supply chain is essential, with energy efficiency being the most cost-effective solution. Programs by the Bureau of Energy Efficiency targeting vehicles, appliances, and buildings must be strengthened. Investing in renewable

energy, particularly through the government's 175 GW solar and wind target, can drive a low-carbon future. Public awareness and support for clean energy, as seen in Tamil Nadu's TEGI initiative, are also crucial for success.

CONCLUSION

Urbanization is a key driver of national development, involving the transformation of remote areas through infrastructure expansion. Infrastructure encompasses essential facilities and institutions – such as educational centers, healthcare services, employment opportunities, and food security mechanisms—that collectively support a region's economic growth. On the other hand, it should be noted that urbanization is one of the major causes of pollution in today's world. As a result, we now live in highly polluted cities where daily life is becoming increasingly difficult. Urban pollution has led to various health problems, and the most concerning issue is our lack of full awareness about it. It is time to take action to reduce pollution and make the world a better place for future generations.

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RIGHT TO BREATHE: PUBLIC HEALTH AND AIR QUALITY IN SDGS ERA

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Abstract

From time to time the Supreme Court of India and different High Courts have interpreted Article 21 to include the right to clean air and healthy environment which encompasses clean air. The rapid expansion in industrial infrastructure, transportation and increasing urbanization increases environment related litigation involving multi-disciplinary issues risk to human health and environment arising out of hazardous activities has also become a matter of concern. According to WHO, 1 in 4 of all global deaths are due to environmental risk factors such as air, water and soil pollution, chemical exposures, climate change and ultraviolet radiation contribute to diseases and injuries. Air pollution is causing a global public health crisis. Now the question arises, - does world community including India need stringent policies to bring more framework for the air pollution concerns? Does orders of judicial response to right to breathe clean air are adequate in strengthening SDGs? As such, the present paper seeks to explore the core dimension of environmental crisis through legally enforceable duties to protect “right to breathe clean air” as a “fundamental human right”. It analyses as to how these issues impact on public health of different sections of society in 21st century. It, in order to achieve several goals of Sustainable Development, focuses on laws pertaining to air quality to reassure the individual, if this freedom is vitiated for the benefit of the future of the earth.

Keywords: Air Pollution, SDGs, Right to Breath, Human Rights, Right to Clean Air. Laws Pertaining and Air to Quality.

INTRODUCTION

Throughout the world, environmental crisis has evolved into a complex and multi-layered problems shaped by rapid urbanization, unchecked industrial growth,

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rising population and overburdened infrastructure. The cities frequently rank among the most polluted urban centers globally with air quality often falling to hazardous levels, water sources becoming increasingly toxic and waste systems collapsing under the sheer volume of urban output. These issues are no longer occasional occurrences but have become embedded in the everyday experience of life worldwide and India is not an exception. However, the crisis presents not only environmental and health challenges but also structural governance failures. Despite of variety of initiatives taken by the Indian Government ranging from emission control measures to public interest litigations and awareness campaigns, the impact on the ground remains inconsistent and often insufficient. It may point out that, environmental degradation is not the result of single cause but rather a confluence of interrelated systems such as transportation, energy consumption, waste management and land use policies are naturally increases the emission of particles into air that make it unfit for breathing.

Air pollution has become a major environmental and public health issue because of industrialization and it makes challenging to balance economic growth with environmentally sustainable practices. “Air pollution is the causative agent of over millions of deaths, per annum, most of which is recorded in middle-income countries” (WHO, 2018). This naturally increases the emission of particles into air that make it unfit for breathing. As a result, “the United Nations’ member nations adopted the 17 Sustainable Development Goals (SDGs) in the year 2015 to ensure the achievement of a better and an ideally envisioned world, by the year 2030” (UNDP, 2015). These goals broadly cover aspects such as “elimination of poverty, climate change, ensuring health and well-being of all individuals, abolishing inequalities, promoting peace and development and many more visions that aim to make the world a better place”(WECD, 1987).

Now to achieveseveral goals of sustainable development, it is imperative to recognize “right to breathe clean air” as a human right instead of policy objectives because adding the “human rights” angle will concretize the legally enforceable duties with regards to protecting the rights of every citizens. It is in this sense; this paper seeks to explore these core dimension of environmental crisis through legally enforceable duties with regards to guaranteeing and respecting the “right to breathe clean air” as a “fundamental human right of every citizens”. The paper assesses the impact of air pollution as a barrier to achieving the SDGs and the consider the management of air quality can enable progress towards meeting the goals. It begins by outlining the major environmental challenges particularly air pollution confronting the city all over the world todayand then moves towards analysing how these issues impact on public health of different sections of society in 21st century. The papersets the foundation for understanding why a shift in approach that incorporates the interpretation of “right to breathe clean air” as a human right and

not merely a policy objective is necessary and urgent. Since human rights approach confers upon an individual the freedom to obtain clean air and obligations to maintain the same. Therefore, this paper focuses on laws pertaining to air quality to reassure the individual, if this freedom is vitiated for the benefit of the future of the earth.

SDG AND AIR POLLUTION

The United Nations member states adopted the 2030 Agenda for SDGs to achieve a sustainable development. The SDGs are a collection of 17 global goals, 169 targets and 247 indicators set by the United Nations to address “environmental, economic and social challenges” (Everard, M., 2018). However, the world community won’t be able to achieve these futuristic goals if air pollution is not addressed. That’s why SDGs tries to achieve a sustainable future for all while addressing environmental degradation that meets the “needs of the present without compromising the future generations” (WECD, 1987). “More than ninety percent of the world’s population lives in areas where air pollution exceeds WHO standards” (Gopi Ranganath, 2022). As a result, air pollution becomes a global challenge in many cities across the world, however, the problem is more severe in Asian countries like India, Pakistan China and Bangladesh. In this way, air pollution significantly affects SDGs in the following manner:

SDG 1, No Poverty: The aim of this this SDG is to “ends poverty in all its forms everywhere but poor people tend to suffer more from air pollution than their wealthier fellow citizens” (Elder, M. &Zusman, 2016). Often poor people use fuels for cooking, leading to increased air pollution. Therefore, efforts towards eradicating poverty can have important co-benefits for air quality and vice versa.

SDG 2, Zero Hunger: This goal tries to end hunger, achieve food security and improved nutrition and promote sustainable agriculture. However, air pollution has direct effects upon food resources reducing crop yields and increasing the risk of food insecurity. “Air pollution damages crop and reduces agricultural productivity. This is a huge risk to global food security and a hindrance to achieving the target of zero hunger by 2030” (Lode, B Schonberger, 2016).

SDG 3, Good Health and Well-being: This goal tries to seek healthy lives and promote well-being for all. But “air pollution is a major risk to human health with impacts on the respiratory system, cardiovascular effects and increasing evidence of a life time health impact” (Lode, B Schonberger, 2016). Every year, people are dying due to air pollution therefore, reducing air pollution will significantly reduce the associated death and disease.

SDG 4, Quality Education: This goal ensures inclusive and equitable quality education and promote lifelong learning opportunities for all. However, air

pollutants can affect the neurological and cognitive development of the young. More importantly, “air pollution reduces the benefit of educational opportunities because highly polluted environments smog events may lead to short term school closures. Efforts to reduce emission and address air quality management will bring co-benefits for this goal” (James Longhurst, 2018).

SDG 5, Gender Equality: This SDG seeks to achieve gender equality and to empower all women and girls. However, women are more at risk from exposure to indoor air pollutants released from unclean cooking fuels such as coal and wood associated with cooking practices. Efforts to address air quality management play an important role in reducing air pollution and improving health for women.

SDG 7, Renewable Energy: “This goal ensures access to affordable, reliable, sustainable and modern energy for all. “Air pollution has a direct association with this goal because wood and coal burning are common for heat and cooking are cheaper sources of energy but both are associated with high levels of emissions of air pollutants” (SDG Report, 2024). One can say that, the clean and renewable energy sources can help to reduce air pollution from sources such as cooking, heating and transportation.

SDG 9, Industry, Innovation and Infrastructure: This goal focuses on “building resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation” (SDG Report, 2024). However, industrial emissions, power generation and transport are major contributors to air pollution. For example, industries fueled by fossil fuels are major contributors to air pollution and a shift to cleaner fuels and technologies can have immense benefits for air quality.

SDG 11, Sustainable Cities and Communities: This goal make the make “cities and human settlements inclusive, safe, resilient and sustainable” (UN’ SDGs Report, 2024). However, people’s death and ill health rates are affected by exposure to pollutant concentrations. The efforts to make cities more sustainable and resilient, it is important to promote sustainable urban planning which would control air pollution by reducing energy demand.

2SDG 12, Responsible Consumption and Production: This goal ensure sustainable consumption and production patterns. However, chemicals and waste release from consumption and production in to the atmosphere contributes air pollution. So, the target should focus on improving the “management of chemicals and waste and reducing their release into the atmosphere, water, and soil. This could help reduce emissions arising from activities such as waste burning” (UN SDGs Report, 2024).

SDG 13, Climate Action: This goal takes an urgent action to combat climate change and its impacts. However, air pollution has direct impacts on this goal because fossil fuel combustion in industry, commerce, transport, agriculture and the home, is a major contributor to climate change with impacts on health, food supplies,

access to fresh water and impacts upon the marine environment (UN SDGs Report, 2024). Efforts to address climate change and improve the emissions mitigation will reduce air pollution.

SDG 15, Life on Land: “This goal protects, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and land degradation and biodiversity loss” (UN SDGs Report, 2024) However, “air pollution has direct impacts on vegetation from ambient concentrations and from dry and wet deposition pathways as a result of fuel combustion and other sources of emissions. Action to address air quality management will bring direct benefits for this goal” (Everard, M. et al., 2013).

SDG 16, Peace, Justice and Strong Institutions: “This goal promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels” (UN SDG). However, “air pollution’s contribution to climate instability will result in reduced access to key resources such as food or fresh water and may lead to resource conflict at the local i.e. access to grazing and international scale, i.e. the increased risk of water wars”(James Longhurst, 2018). Actions is needed to local and transboundary quality management initiatives which will bring co-benefits for this goal and will address environmental injustices.

SDG 17, Partnership for the Goals: This goal tries to “Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development”(UN SDG). However, there are various examples of ineffective institutional responses identified at both the national and international to address air pollution at local, national and international level leads to policy gaps and lack of engagement. So, the partnership between different stakeholders are the need of an hour which can help to mitigate local and transboundary air pollution which will bring direct benefits for this goal.

From the above arguments, it becomes clear that, air pollution significantly affects several goals because of the interlinkages between air pollution. That’s why SDGs acknowledges that addressing air pollution is crucial to sustainable development. In other words, SDGs are an opportunity which helps towards tackling the issue of air pollution and provide a global platform for collaboration between different stakeholders from policymakers, civil society, and the private sector. More importantly, structured framework integrates air pollution into the existing SDGs framework which can accelerate the achievement of SDGs by 2030. Therefore, SDGs provides a global platform to tackle air pollution and stressing the importance of air pollution as a human health hazard.

IMPACT OF AIR POLLUTION ON PUBLIC HEALTH

The health impacts of air pollution put future generations at risk because it can have an undesirable change in the physical, chemical or biological properties of air mass that affects its life supporting characteristics in one way or the other. Due to air pollution, the composition of the air is changing all over the world, especially in industrialized economy. So, the problem of air pollution spans the entire world and have profound effects on health. According to the WHO statistics, “approximately seven million people died of air pollution around the world. About 88 percent of these deaths occur in low- and middle-income countries which represent 82 percent of the world population” (WHO, 2016). “Approximately 80 percent of the death caused by air pollution where due to strokes and heart diseases, about 11 percent fatalities came from lungs diseases and another 6 percent due to cancer”. (WHO, 2016). Furthermore, in 2019 the percentage of global deaths from air pollution are “Chronic obstructive pulmonary disease – 40 per cent, Diabetes – 20 percent, Ischemic heart disease – 20 per cent, Lower respiratory infections – 30 percent, Lung cancer – 19 per cent, Neonatal deaths – 20 per cent, and Stroke – 26 percent” respectively” (Global Air Report, 2020). However, most of the country’s including India are adopting policies for improving air quality, such as vehicle emission standards and promoting clean cooking and heating still “more than 80% of people living in urban areas that monitor air pollution are exposed to air quality levels that exceed the WHO guidelines” (WHO Global Urban Ambient Air Pollution Database, 2024).

Due to exposure to air pollution, numerous respiratory allergies and asthma, cardiovascular disorder and even lungs and blood cancer are found to be linked with toxic air pollutants. “Pollutants that are a major public health concern include particulate matter, carbon monoxide, ozone, nitrogen dioxide and sulphur dioxide. Out of these pollutants, PM_{2.5} – particulate matter with a diameter less than 2.5 microns is a common proxy for air pollution as it poses the greatest health risk” (UNDP, 2022). “Exposure to high concentrations of PM_{2.5} leads to increased mortality or morbidity and increases the risk of developing lung cancer or cardiovascular and respiratory diseases. Given its minute size, it can penetrate the lungs and enter the bloodstream” (WHO, 2020). Now the question arises - are human activities responsible for the recent observed deterioration of clean air, or might it have caused by some natural process? In order to answer this question, it is necessary to analyse the sources of air pollutants which originate from natural and man-made activities. It may point out that, natural events include volcanoes, forest fires and dust storms. Man-made causes include the burning of fossil fuels for electricity generation, transportation fuels and industrial operations.

Globally, only 18% of total urban ambient air pollution resulting from PM_{2.5} originates from natural sources, while 82% is attributable to man-made sources”

WHO Global Urban Ambient Air Pollution Database, 2024). “In comparison to outdoor pollution, indoor pollution caused 4.3 million deaths with a large majority of the fatalities being in poor and developing countries. Strokes led to 34 per cent of the deaths, 26 per cent due heart disease and another 12 per cent due to respiratory diseases in children. WHO has classified air pollution as class – I carcinogen because it is directly link to lungs cancer” (Krishna, 2024). Moreover, the State Global Year 2024 reports provides for a comprehensive analysis of data for Air Quality and health impacts for countries around the world in 2021. The analysis finds that air pollution account for 8.1 million death globally in 2021 becoming the second leading risk factor for death.

“In India, 2.1 million death were caused due to air pollution” (Krishna, 2024) however, several mitigation measures have been implemented to control air pollution such as firstly, “the Euro – VI standards” came into effect in April 2020 throughout India for all light and heavy-duty vehicles. Secondly, the Pradhan Mantri Ujjwala Yojana (PMUY) Scheme” provided 50 million LPG connections to households with incomes below the poverty line. Thirdly, “the Graded Response Action Plan (GRAP)” was adopted in Delhi to tackle pollution control. Fourthly, “the National Clean Air Programme (NCAP)” is India’s flagship scheme for improving air quality and the NCAP targets PM2.5 reductions of 20-30% in 122 selected cities by 2024. Despite of these initiatives, approximately 92% of the population in India is exposed to unhealthy levels of air pollution that violate the human rights to live in a clean, healthy and sustainable environment. In this way, one can say that, clean air must be recognised as a basic human right and priority policy which gives greater urgency to take actions that will mitigate air pollution and generates additional impetus for civil society to demand remedies in courts of law.

RIGHT TO BREATHE CLEAN AIR AS A HUMAN RIGHT IN STRENGTHENING THE SDGS

Air pollution violate people’s right to live in a safe, clean, healthy and sustainable environment. As a result, the United Nations Human Rights Council (UNHRC) on 6th October, 2021 recognised assess to a clean, healthy and sustainable environment as a fundamental right. This is a notable development as it will help to fight against climate change and its devastating consequences and also strengthen the judiciary in deciding cases involving environmental issues. This has been termed as “a breakthrough movement for environmental justice and historically a landmark resolution” (Shastri, 2023). The concern over the state of environment has grown the world over since the Sixties. The decline in environmental quality has been evidenced by increasing pollution, loss of forest cover and biological diversity,

excessive concentration of harmful chemical in the ambient atmosphere and in food chains, growing risk of environmental accidents and threat to life support systems.

From time to time various legislation relating to protection of environment from specific type of pollution have been passed by the Indian legislature. The “Environmental (Protection) Act, 1986 is the most comprehensive act on the Indian Statute book relating to environment protection. It was enacted under Article 253 of the Constitution. Furthermore, this Act is umbrella legislation enacted to provide for the coordination over the central and the state authority established inter alia under “the Water Act, 1974” and “the Air Act, 1981”. For example, regarding air pollution control also falls within the Environment Act apart from the Air Act, 1981. The Air (Prevention and Control of Pollution) Act, 1981 was enacted by the parliament under Article 253 of the constitution to implement the decision taken at the United Nations Conference on the Human Environment held at Stockholm in June 1972 in which India participated. It was decided to take appropriate steps for the preservation of the natural resources of the earth, which among other things, include the preservation of the quality of air and control of air pollution. Hence, the recognition of the right to a clean, healthy and sustainable environment as a basic human right plays an important role in strengthening SDGs on the following manner:

Recognizing sustainable environment as a human right opens the doors to identifying both the various attributes of a clean environment as well as groups that are denied access to a clean environment. It has to be noted that such kind of approach encourages people to question why there is a “lack of a clean environment”, “how should mitigate air pollution” and “who should be held responsible”.

Recognition of clean environment as a basic human right, any form of environmental pollution (including air pollution) becomes an abuse of a human right which demands remedial action on the part of both States and Industries.

Recognizing sustainable environment as a human right encouraged further commitments and action from multilateral agencies, strengthening the legal status of the right to clean air. Recognition of human rights approach established an independent monitoring because of the right to clean air in the legal framework has led to the creation of independent regulatory bodies that not only monitor compliance but also drive policy changes and enforce implementation.

Recognition of human rights approach to strengthen SDGs plays a crucial role because several countries updated their legal frameworks to reflect right to breathe clean air as human rights, including India. For example, in 2019 the Private Member’s Bill was introduced in Rajya Sabha i.e. “Right to Breathe Clean Air Bill, 2019” to recognize the to breathe clean air as a fundamental right, to establish a

clean air authority of India and mandate ambient air quality standards across India. That Bill was contained penal provisions for non-compliance, citizen grievance redressal etc., however the bill was not passed due to dissolution of Lok Sabha. Further, in 2021 Ministry of Environment, Forest and Climate Change introduce “Commission for Air Quality Management in NCR and Adjoining Areas Act, 2021” to tackle the rising air pollution in Delhi – NCR and the ineffectiveness of previous ad-hoc bodies like EPCA. This Act is enacted and enforced and working as a strongest centralized authority for air pollution control in India.

JUDICIAL APPRAISAL AND LAWS PERTAINING TO AIR QUALITY IN SDG ERA

The Constitution of India implicitly recognised “the right to breathe clean air as a fundamental right under Article 21” (M.P. Jain, 2017). In 1976, the parliament through 42nd Constitutional Amendment Act added Article 48A in chapter IV i.e. Directive Principle of State Policy (DPSP) and Article 51A(g) in chapter IVA i.e. Fundamental Duties. From time to time the Supreme Court of India and different High Courts have interpreted Article 21 to include the right to clean air and healthy environment which encompasses clean air.

Subhash Kumar V. State of Bihar (1991) SCC420: In this case, the honorable Supreme Court held that, “right to pollution free air and water is a part of Article 21” (Alok Kumar Ranjan, 2025).

Murli S. Deora V. Union of India (2002) SCC40: In this case the honorable Supreme Court imposed a “ban on smoking in public places as non-smokers have a right not to be victims of air pollution”. (S.C. Shastri, 2023).

M.C Mehta V. Union of India (1987) SCC395 (Oleum Gas leak Case): In this case, the honorable Supreme Court held that, “industries engaged in hazardous activities are absolutely liable for any harm caused, without exception” (S.C. Shastri, 2023).

M.C Mehta V. Union of India (1999) SCC9 (Vehicular Pollution Case): In this case, the Supreme Court directed “all commercial vehicles in Delhi to switch to CNG fuel, ban on old diesel vehicles etc.” (S.C. Shastri, 2023).

M.C Mehta V. Union of India (1997) SCC353 (Taj Trapezium Case): In this case, the honorable Supreme Court held that “industries around the Taj Mahal causing air pollution must switch to clean fuels or relocate” (S.C. Shastri, 2023).

M.C Mehta V. Union of India (2004) SCC588 (Delhi Industrial Pollution Case): In this case, the honorable Supreme Court ordered “closer or relocation of polluting industries operating in residential areas in Delhi and upheld the right to pollution free environment under Article 21” (S.C. Shastri, 2023).

M.C Mehta V. Union of India (2018) SCC578 (Fire Crackers Case): In this case, the honorable Supreme Court imposed “restriction on sale and use of fire crackers, especially in NCR, allowed only green crackers” (S.C. Shastri, 2023).

T. Damodhar Rao V. Municipal Corporation of Hyderabad (1987): In this case, the honorable High Court held that “environmental degradation violates Article 21” (Alok Kumar Ranjan, 2025).

Vedanta Limited V. State of Tamil Nadu & Ors. (2020): In this case, the honorable Supreme Court held that “economic growth cannot come at the cost of environmental degradation, especially when the violation poses long term health and ecological risk” (Swapnil Katiyara, 2025).

Vellore Citizens Welfare Forum V. Union of India (1996) SCC647: In this case, the honorable Supreme Court emphasised “the principle of sustainable development and the importance of the strict adherence to environmental regulation to protect public health and safety”(Alok Kumar Ranjan, 2025).

The rapid expansion in industrial infrastructure, transportation and increasing urbanization increases environment related litigation involving multi-disciplinary issues risk to human health and environment arising out of hazardous activities has also become a matter of concern. The honorable Supreme Court in number of cases highlighted the difficulty faced by the judges in adjudicating on complex environmental cases and let emphasizes on the need to set up a specialized court. Law Commission in its 186th report, 2003 recommended for the setting up of environmental codes in each state or for a group of states. Finally, both the house of parliament passed the National Green Tribunal Bill, 2009, it received presidential assent on 2nd June 2010 and came into force on 18th October 2010 as “the National Green Tribunal Act, 2010”, it started function from 4th June 2011. With the enactment of this Act, India became third nation after Australia and New Zealand to have established special courts for environmental issues.

CONCLUSION

To conclude the paper, it can be argued that air pollution is not just an environmental issue but also the biggest health challenge across the world. That's why international community including Indian Government have been taken several initiatives from time to time to manage air pollution and recognised assess to a clean, healthy and sustainable environment as a fundamental right. Even though, the Constitution of India implicitly recognised the “right to breathe clean air” as a fundamental right under Article 21 and honorable Supreme Court and different High Courts held that right to breath clean air and healthy environment is a fundamental right and also given various directives to the Government and its authorities to protect environment and prevent air pollution. Apart from constitutional provisions

and laws, India has implemented multiple policies, action plans, programmes, technological solutions and public initiatives to prevent and control air pollution such as National Clean Air Programme 2019, Graded Response Action Plan 2017, Faster Adoption and Manufacturing of Electric Vehicles Scheme, Bharat Stage VI Emission Norms 2020, Smog Towers, Control of Stubble Burning etc.

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SUSTAINABLE DEVELOPMENT, CLIMATE CHANGE AND POLICY INITIATIVES

Kaneez Zehra*

Abstract

The sustainable development goals which have been adopted by the UN reflect peace, prosperity and development all over the world. There are 17 sustainable development goals which demand action by all countries, developing and developed, working together with cooperation and coordination through global partnerships. Global warming has led to climate change and its adverse impact can be felt everywhere. Rising temperatures, melting of glaciers, rise in the ocean level and natural disasters all affect the ecosystem and impact biodiversity. Climate change is affecting the environment which in turn has an adverse effect on sustainable development. Although several strategies have been devised to combat climate change, there are challenges to cope with climate change. The present paper attempts to study climate change and its impact on sustainable development with the objective of reducing the carbon footprint. Our study finds that there are of course challenges, but a coordinated effort would go a long way in protecting our planet earth. It is in this context that climate change needs to be studied and understood along with implementation of resilience building strategies.

Keywords: Sustainable Development, Climate Change, Biodiversity, Global Warming, Carbon Footprint, Resilience Building.

INTRODUCTION

The Sustainable Development Goals (SDGs) were adopted by all the United Nations Member States in 2015 with the objective of addressing social, economic and environmental challenges which affect not only the developing nations but the developed nations as well.

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THEORETICAL PERSPECTIVES

This paper is an attempt to study how global warming has caused climate change with its resultant impact on sustainable development and with the objective of reducing the carbon footprint. It mainly relates to 3 of the SDGs – namely, Climate action, Life below water and Life on land. Greenhouse gases play a vital role in maintaining Earth's temperature at a level suitable for sustaining life. These gases, including carbon dioxide, methane, and water vapor, form a natural layer in the atmosphere that traps part of the heat radiated from the Earth's surface. Without this greenhouse effect, most of the planet's heat would escape into space, leading to a dramatically colder environment. Scientists estimate that without greenhouse gases, Earth's average surface temperature would drop to around -20°C , making it too cold for most current life forms to survive. The greenhouse effect, therefore, acts like a thermal blanket, keeping the planet warm enough to support ecosystems, agriculture, and human life. However, while the natural greenhouse effect is essential, human activities that increase greenhouse gas concentrations intensify this effect, leading to global warming and climate change. Balancing these gases is crucial for maintaining Earth's stable and habitable climate (IPCC 2015).

The greenhouse effect is the mechanism causing global warming which in turn leads to climate change. We need to have sustainable development goals in order to combat climate change. Climate action has to be undertaken to regulate greenhouse gas emissions which are responsible for increasing global temperature. If the temperature is not controlled, then the impact would be severe. Every nation has an important role to play in reduction of greenhouse gas effect and reducing the carbon footprint (Singh & Roy 2018).

The causes of global warming are mainly due to human induced activities such as industrial activities, infrastructure development, deforestation, animal husbandry and agricultural practices. All these account for an increase in global warming. The global temperature rise needs to be limited to 1.5 degrees and all the efforts need to be directed to limiting this temperature.

Fossil fuels, coal, oil and gas are the largest contributors to global climate change, accounting for over 75% of global greenhouse gas emissions and nearly 90% of all carbon dioxide emissions (World Bank 2009). As greenhouse gas emission envelope the earth, they trap the sun's heat leading to global warming and climate change. The increase in temperatures over a period of time result in changing weather patterns and disrupt the balance of nature. This poses many challenges and risks to human beings and all other forms of life on earth.

Our planet earth is enveloped with an atmosphere consisting of gasses like nitrogen, water vapour, carbon di oxide, methane, nitrous oxide and ozone. These gasses act as a blanket and cause global warming due to the Greenhouse Effect.

Greenhouse gasses such as carbon di oxide and methane are the major contributors to causing the greenhouse effect (IRENA (2020). Carbon di oxide is produced when gasoline in combustion engines used in vehicles is burnt or when coal used for heating buildings and generating electricity is burnt. Deforestation for harvesting wood and clearing of land for industry or agriculture also releases carbon di oxide. The main source of methane is animal husbandry.

The greenhouse effect has led to global warming which in turn has affected the nature of the climate. Eventually, changes in the climate occurred with changes in rainfall patterns and changes in temperatures which have given rise to natural disasters such as cyclones on one hand and drought on the other.

During the last 150 years, industrial activities have increased substantially with resultant increase in the greenhouse effect. Industrial activities are primarily dependent on fossil fuels and the consumption since the beginning of the Industrial Revolution has increased by 30%.

Global warming has become a regular phenomenon and the solution to reduce the impact of greenhouse gas emissions is not possible without cooperation at the global level. As per the systems theory in Public Administration, a system does not operate in a vacuum. It interacts with the other subsystems and the consequences of that interaction are different but are felt on the environment. Similarly, climate change impacts the lives of individuals affecting their health, economy and environment all over the globe.

The average temperature of the earth is now 1.2 degrees centigrade warmer than it was in the late 1800s. The decade from 2011–2020 has been the warmest on record and each of the last four decades have been warmer than the previous decades since 1850.

The emissions that are responsible for climate change cover every part of the world. Some countries produce more than the others. The 6 biggest producers are China, USA, India, European Union, Russian Federation and Brazil which collectively accounted for 63% of the worlds greenhouse gas emissions 2023. The 45 least developed countries account for only 3% of the total emissions.

Agreements and frameworks such as 2015 Sustainable Development Goals, the 1992 UN Framework Convention on Climate Change and the 2015 Paris Agreement all focus on cutting emissions and adapting to climate change to improve the lives of humanity and protect the environment.

About 3.3 to 3.6 billion people are highly vulnerable to climate change as per Intergovernmental Panel on Climate Change (IPCC). People from poorer countries are likely to suffer more as they have fewer resources. Ironically, these poor countries have contributed least to global emissions but will face the brunt of the effect of global warming the most.

Experts believe that the worst can be avoided by reducing emissions to net zero as quickly as possible in order to limit global warming. Countries have pledged to reduce emissions to net zero by the year 2050.

Climate change not only affects humans but also the biodiversity. The impact is becoming more obvious. The timing of biological events is changing as well with some regions being more at risk than other regions as a consequences of climate change.

Some of the effects of climate change and their impact on our resources and society are:

The impact of climate change is hotter temperatures paving the way for heat waves, heat related illnesses, wildfires, etc. Temperatures in the arctic have warmed at least twice as the global average. More severe storms are being witnessed in many regions with extreme rainfall and flooding. Cyclones, hurricanes and typhoons are also responsible for human and economic losses.

The occurrence of drought is affecting water availability and making it scarce in more regions leading to agricultural droughts increasing the vulnerability of ecosystems.

Carbon di oxide levels in the oceans have increased and making them more acidic. This is leading to coral bleaching. Carbon di oxide levels are higher than they have ever been over the past 800,000 years. Scientists have found 6 coral bleaching events since 1998, most notably on the Great Barrier Reef which is one of the valuable ecosystems on earth.

The impact of climate change is also seen on the weather. This also affects the timing of nature's cycles and events which have a detrimental effect on the migration of birds and their reproduction. It also leads to extinction of species such as polar bears and arctic foxes. There is an ever increasing need to expanding agriculture to meet the requirements of food security. Large tracts of forests are cleared to do this. Apart from this, forests are also cleared for activities such as mining, industrialization and for infrastructure projects like road or dams, 17% of the Amazon forest has already been lost. Amazon deforestation is the largest land-based carbon store of the world which helps fight climate change and its depletion has a large negative effect.

Global temperature rise has an adverse impact on climate change. Limiting the average temperature rise to 1.5 degrees Centigrade is very important. The landmark Paris agreement of 2015 signed by almost 200 countries pledged to curb global warming to that level. To limit the damage caused by global warming leading to climate change, there are many resilience building strategies that are being addressed. Climate change is being tackled by switching over from fossil fuel based energy systems to renewable energy systems based on solar, wind,

hydro, geothermal, etc. Electric vehicles are being promoted in order to minimize pollution in densely populated areas such as large cities.

There are many challenges to implement these climate resilience strategies. The foremost challenge is the inadequacy of climate finance especially for the developing countries. At the recent summit in 2024 November, the richer countries committed to give at least 300 billion to developing nations for tackling climate change. However, this is not enough to achieve the required results within the given timeframe. Although the attempt to wean away from fossil fuels and switch over to renewable energy is a noble one, there are severe technological hurdles that need to be overcome. For example, completely switching over to electrical vehicles is not feasible at present since we do not have the charging infrastructure in place. Charging infrastructure with green energy needs to be created.

There is an urgent need to develop new technologies that can be used for setting up eco-friendly manufacturing facilities that use green energy and are non-polluting. Best practices should be followed for minimizing the use of natural resources for manufacture, supply chain management, packaging, etc. Where possible, locally sourced materials and recycled materials should be used and the products themselves should lend themselves to being recycled at the end of their useful life.

ROLE OF GOVERNMENT IN ADDRESSING CLIMATE CHANGE

Sustainable development and climate change are deeply interconnected global challenges that require immediate and coordinated action. Governments play a crucial role in addressing these issues by designing and implementing effective policies, regulations, and international frameworks. Key initiatives include reducing greenhouse gas emissions, promoting renewable energy sources, and ensuring the efficient use of natural resources. Policy tools such as carbon taxes, subsidies for green energy, and energy efficiency standards motivate individuals and industries to adopt environmentally responsible practices. Furthermore, governments work to enhance community resilience against the adverse effects of climate change through adaptation, mitigation, and disaster risk reduction strategies. Public education and environmental awareness campaigns are equally important, as they inspire citizens to take active responsibility for protecting the environment. On a global scale, international cooperation and agreements – such as the Paris Agreement – play a vital role in aligning national efforts, sharing responsibilities, and fostering collective progress toward a sustainable and climate-resilient future.

INDIA'S EFFORTS FOR COMBATING CLIMATE CHANGE

India has undertaken extensive efforts to combat climate change through national missions, international commitments, and innovative policy measures. Under the Paris Climate Agreement, India pledged to reduce the emission intensity of its GDP by 33–35% by 2030 (compared to 2005 levels), increase non-fossil fuel power capacity to 40%, and substantially enhance forest cover to absorb carbon dioxide. As per the Biennial Update Report (BUR), India already achieved a 21% reduction in emission intensity between 2005 and 2014, reflecting proactive national action (Dubash & Jogesh, 2014).

The National Action Plan on Climate Change (NAPCC) guides India's climate response through various missions (Prime Minister's Council on Climate Change 2010). The National Solar Mission targets 100 GW of solar energy, with 32.5 GW already installed. (Sharma & Tomar, 2010) The National Water Mission promotes efficient water use and aquifer management, while the Green India Mission seeks to increase forest and tree cover by 5 million hectares. The Sustainable Habitat Mission integrates climate goals into urban development programs such as AMRUT, Swachh Bharat, and Smart Cities. The Sustainable Agriculture Mission enhances food security, and the Himalayan Ecosystem Mission focuses on preserving fragile mountain ecosystems.

The National Mission for Enhanced Energy Efficiency (NMEEE) introduced the Perform, Achieve and Trade (PAT) scheme to incentivize industrial energy savings. Similarly, the Energy Conservation Building Code (ECBC) 2017 aims for a 50% reduction in building energy use by 2030. Programs like UJALA and the Streetlight National Programme have saved 43 million tonnes of CO₂ emissions through large-scale LED adoption. India also promotes clean mobility under the National Electric Mobility Mission Plan (NEMMP) 2020 and the FAME Scheme, which encourage the production and use of electric vehicles. The National Biofuels Policy (2018) sets blending targets of 20% ethanol in petrol and 5% biodiesel in diesel by 2030 (Byravan & Rajan 2012).

Financial initiatives play a key role in India's climate strategy. The National Adaptation Fund on Climate Change (NAFCC) supports vulnerable states, managed by NABARD. India is a leading issuer in the green bond market, with organizations like IREDA, IRFC, and SBI funding renewable projects. Internationally, India joined the International Platform on Sustainable Finance (IPSF) in 2019 to connect with global green funding sources.

India's leadership in the International Solar Alliance (ISA) demonstrates its commitment to promoting solar energy globally. Complementary national schemes – such as Pradhan Mantri Ujjwala Yojana for clean cooking fuel, Swachh Bharat Mission for sanitation, and Atal Mission for Rejuvenation and Urban

Transformation (AMRUT) for sustainable urban development – further reinforce India's comprehensive climate agenda (Nair, 2015).

Through these wide-ranging actions – spanning renewable energy expansion, forest restoration, clean mobility, sustainable agriculture, and climate finance – India demonstrates strong, multi-sectoral leadership in addressing climate change while pursuing sustainable development and inclusive growth.

POLICY RECOMMENDATIONS

Policy-makers are encouraged to adopt several strategies to strengthen climate and sustainability efforts in higher education. First, they should increase funding for research on climate change and sustainability, emphasizing the role of social sciences in understanding and promoting behavioural change. Building collaborative partnerships among universities, government bodies, and industry is vital to drive innovation and develop sustainable technologies and climate solutions. Policies should also support student and faculty engagement through programmes such as sustainability committees or climate action groups, fostering active participation in practical initiatives. Furthermore, every university should be required to create a climate action plan that sets measurable targets for reducing greenhouse gas emissions and includes transparent systems for monitoring and reporting progress. To ensure accountability, monitoring and evaluation frameworks must be established to track the implementation and effectiveness of these initiatives. Finally, data-driven decision-making should guide policy refinement, ensuring that resources are allocated efficiently and successful practices are scaled up across institutions. Together, these measures can embed sustainability within the core functions of universities, promoting both environmental responsibility and long-term societal change.

To conclude, investments need to be made in education, so that new technologies can be developed. Innovation should be encouraged to reinvent all activities with a view to make them ecofriendly, minimize waste and be sustainable. In order to save planet earth, a global cooperative effort is required to minimize the carbon footprint for the benefit of humanity. Creating awareness is essential at all levels to inspire and have active participation of people at the grassroot level to tackle climate change.

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Priority Areas

The Journal is intended to serve as a forum for discussion and exposition of various forms of public administrative systems of the world and in various aspects like administrative structures, functions, reform processes, relationship of Public Administration with politics, people, society and economy. Burning issues intersecting governance, administration and management, distribution and dispersal of power, local bodies and such other subjects, preferring a reference to Bihar and behavioural dimensions of these aspects, cannot be ignored by this Journal. Certainly the Journal does not seek to be a vehicle for comments either of a political party, a pressure group or an association. However, it will render cooperation to and collaborate with any institution of higher education, government agencies and non-government organisations engaged in furtherance of the objectives of Indian Institute of Public Administration, socio-economic development and also in furtherance of good governance.

Guidelines for Submission

Contributions for the Journal are invited from the persons belonging to any walk of life having interest in Public Administration, Democratic Institutions, Policy and Development Process. Contributors are requested to submit their article/research papers, research notes, book reviews etc. typed in MSW format using New Times Roman 12 point font (on A4 size paper) with 1.5 space in the soft copy only addressed to the Editor, on the following email address:

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The contributions received by **March** shall generally be considered for Jan-June issue and those received by **September** shall be considered for July-December issue. Contributors, not receiving any response from the editorial within **six months** from the date of submission, should assume one's research paper/article as not selected, however, it may be resubmitted. The contributors are also supposed to furnish the duly filled in 'Authors' Declaration' format (in soft copy), available on the website - <www.iipabiharbranch.org> click Journals Tab.

The length of the research paper for submission should normally be between 3000 and 5000 words; however, the special papers by reputed authors will have no such restrictions. Contributors are requested to apply universal reference pattern, preferably MLA/APA in-text referencing supported with bibliography at the end and 'end-notes' if any. There is a section of 'book reviews, research notes and impressionistic notes' which should be of the length of around 1500 words. The senior bureaucrats may also submit their experiences of public administration for publication.

– Editor

Note: The papers are published only after passing the muster of the referees. Editorial Board will have right to accept/reject a contribution without assigning any reason. The address for correspondence: Dr. R K Verma, Editor, BJPA, Shiva Path, (Dopulwa), New Prendrapur, Patna - PIN: 800 001 Mob.: 7762882579



बिहार के महामहिम राज्यपाल-सह-कुलाधिपति **Jh vkfjQ ekgEen [kku** के मार्गदर्शन में मगध विश्वविद्यालय, बोधगया, गुणवत्ता, उत्कृष्टता और परिवर्तनकारी उपलब्धियों की असाधारण यात्रा पर द्रुतगति से अग्रसर है। अटूट प्रतिबद्धता के साथ माननीय कुलपति प्रोफेसर एस.पी. शाही के दूरदर्शी नेतृत्व में विश्वविद्यालय नई ऊँचाइयों पर पहुँचने तथा शिक्षा और शोध में अभूतपूर्व मानक स्थापित करने की ओर अग्रसर है। विश्वविद्यालय के कुलपति ने छात्रों, शिक्षकों और अन्य सभी हितधारकों को अकादमिक क्षेत्र में उत्कृष्टता प्राप्त करने के लिए नई जिम्मेदारियाँ सौंपी हैं तथा उनके अब तक के कार्यकाल के दौरान निम्नलिखित उल्लेखनीय कार्य पूर्ण हुए हैं।

- स्नातक और स्नातकोत्तर स्तर पर पारंपरिक और व्यावसायिक पाठ्यक्रमों के विभिन्न सत्रों को नियमित करने हेतु वर्षों से लंबित परीक्षाएं आयोजित कर परिणाम घोषित किए गए एवं शेष प्रगति पर है।
- मार्च 2023 से आज तक 5,50,409 से अधिक प्रमाणपत्रों का निराकरण करते हुए संबंधित विभाग/महाविद्यालयों को भेज दिए गए हैं।
- सत्र 2023-2024 से स्नातक स्तर पर "राष्ट्रीय शिक्षा नीति 2020" लागू कर दी गई।
- विश्वविद्यालय में 409 से अधिक सेमिनार, कॉन्फ्रेंस एवं वर्कशॉप किए जा चुके हैं।
- विश्वविद्यालय एवं महाविद्यालयों में वर्ग संचालन सुचारु रूप से हो तथा छात्र-छात्राओं की 75 प्रतिशत उपस्थिति सुनिश्चित हो, इसके लिए गंभीर प्रयास लगातार जारी है।
- मगध विश्वविद्यालय ने व्याख्यानों, संगोष्ठियों और कार्यशालाओं का आयोजन कर अकादमिक उत्कृष्टता में उल्लेखनीय वृद्धि की है।
- शिक्षण कौशल अंतर-विषयक अध्ययन और शोध में नवाचारों को बढ़ावा देने के लिए यू0जी0सी0 द्वारा स्थापित मानदण्डों को लागू किया गया है।
- अवकाश प्राप्त 90 प्रतिशत एवं शिक्षकेत्तर कर्मियों की समस्याओं का समाधान किया जा चुका है।
- जन शिकायत कोषांग का गठन किया गया है और प्राप्त आवेदनों का ससमय निष्पादन किया जा रहा है।
- विश्वविद्यालय द्वारा मार्च 2023 से आज तक कुल 150 से अधिक परीक्षाएँ आयोजित की गई हैं।
- अवकाश प्राप्त शिक्षक एवं शिक्षकेत्तर को सेवानिवृत्ति के दिन ही पेंशन भुगतान करने की परम्परा पुनः आरंभ की गई है।
- नैक में अच्छी ग्रेडिंग हेतु विश्वविद्यालय परिवार दृढ़ संकल्पित है।
- विश्वविद्यालय के भवनों के जीर्णोद्धार एवं नवीन भवनों के निर्माण हेतु अंतर्राष्ट्रीय स्तर के वास्तुकार द्वारा DPR तैयार कर कार्यारंभ किया जा चुका है।
- विश्वविद्यालय के छात्र हित में गठित प्लेसमेंट सेल के अंतर्गत परिसर स्थित प्रबंधन विभाग के 12 छात्रों का बंधन बैंक में कैंपस प्लेसमेंट हुआ इसे और अधिक बढ़ाये जाने की योजना है।
- IIT, Patna के Computer Science Department में Artificial Intelligence प्रारंभ के लिए मगध विश्वविद्यालय, बोधगया के प्राध्यापकों की Training एवं पढ़ाई प्रारंभ करने के लिए विभिन्न Statutory Bodies द्वारा अनुमोदन प्राप्त कर लिया गया है।
- Permanent IQAC Cell Functional है।
- विगत 9 वर्षों का AQAR (2015-2024) नैक पोर्टल पर सफलतापूर्वक अपलोड कर दिया गया है।
- शोध को बढ़ावा देने के लिए Research Development Cell की स्थापना की गई है। इस प्रकोष्ठ के तहत Research Project के लिए शोधार्थियों को वित्तीय सहायता देने हेतु 05 करोड़ ₹0 की राशि आवंटित की गई है।
- विद्यार्थियों की सुविधा के लिए दो बसों का संचालन परिवहन विभाग, बिहार सरकार पटना के द्वारा करवाया गया है।
- माननीय कुलपति महोदय के नेतृत्व में विश्वविद्यालय एवं महाविद्यालय के राजनीति विज्ञान विभाग के पाँच शिक्षकों के साथ सियोल (South Korea) में आयोजित अंतर्राष्ट्रीय राजनीति विज्ञान अधिवेशन में शोध पत्र प्रस्तुत किया और सत्र की अध्यक्षता की जो समावेशी शोध Inclusive Research का अन्यतम उदाहरण है।
- एक दशक के बाद मगध विश्वविद्यालय द्वारा दीक्षांत समारोह 22वें का भव्य आयोजन किया गया और 23वें दीक्षांत समारोह की तैयारी आरम्भ कर दी गई है।
- सत्येंद्र नारायण सिन्हा A.I. Centre का शिलान्यास महामहिम श्री आरिफ मोहम्मद खान, राज्यपाल-सह-कुलाधिपति, बिहार एवं श्री हरिवंश जी, माननीय उपसभापति, राज्यसभा, नई दिल्ली के द्वारा किया गया।
- दो अंतर्राष्ट्रीय समझौता ज्ञापन-प्रबोरोमार्गवनोक संस्थान, लोक स्वास्थ्य मंत्रालय, थाईलैंड एवं एस्पायर संस्थान हार्वर्ड विश्वविद्यालय, अमेरिका के साथ किए गए। इसके अतिरिक्त 09 विभिन्न संस्थानों से राष्ट्रीय समझौता ज्ञापन भी हस्ताक्षरित हुए।
- जंतु विज्ञान और गृह विज्ञान के शिक्षकों और शोधार्थियों ने 03 पेटेंट भारत सरकार से हासिल कर विश्वविद्यालय को अत्याधुनिक फलक पर गौरवान्वित किया।

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