UGC Approved Indexed Peer Reviewed Journal

ISSN: 2320-6586 (Online)

IILM UNIVERSITY

Technologies for Sustainable Development Goals 2025 (TECH4SDG-2025)

School of Computer Science & Engineering

IILM University Greater Noida

Presents

1st National Conference

on

Technologies for Sustainable Development Goals 2025 (TECH4SDG-2025)

3rd March 2025

Technically Co-Sponsored by IEEE UP SECTION (INDIA)

Venue:

IILM University, Greater Noida

Plot No.18,16, Knowledge Park II, Greater Noida, Uttar Pradesh 201306

Procedings Published at

International Journal of Research in Modern Engineering and Emerging Technology

Vol. 13, Sp. Issue 1, April 2025

Doi: https://doi.org/10.63345/ijrmeet.org.v13.si1.1301

Editor-in-Chief

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www.ijrmeet.org

ISSN: (Online) 2320-6586

INTERNATIONAL JOURNAL OF RESEARCH IN MODERN ENGINEERING & EMERGING TECHNOLOGY

(IJRMEET)

I.F. (wef. 2023: 6.004)

Vol. 13, Sp. Issue 1, April: 2025

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Published By
Resagate Global
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IJRMEET
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On behalf of the *International Journal of Research in Modern Engineering & Emerging Technology (IJRMEET)*, I extend my heartfelt gratitude to all the authors and research scholars for choosing our platform to publish their valuable research contributions.

IJRMEET, a Refereed, Peer Reviewed, Indexed, and Monthly Journal in Electronic format, has been consistently dedicated since April 2013 to advancing scholarly work in the domains of Modern Engineering and Emerging Technologies. Your innovative and quality research is at the core of our mission to promote academic excellence and practical solutions in the ever-evolving field of engineering and technology.

We believe that publication should be based purely on the merit, originality, and relevance of the research, not on financial considerations. We ensure that every manuscript undergoes a thorough review process to maintain the integrity, reliability, and scholarly value of each published work.

Our journal aims not only to disseminate high-quality research globally but also to highlight critical engineering problems and their practical resolutions. I encourage researchers, academicians, faculty members, and industry professionals to continue contributing to IJRMEET and to inspire their peers and students to join us in this academic pursuit.

We sincerely thank our respected Editors, Reviewers, Technical Advisors, Authors, Web Developers, Subscribers, Supporters, and the extended academic community whose efforts and encouragement make each issue of IJRMEET a successful endeavor.

With warm regards,

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डॉ. मोहम्मद रिहान / Dr. Mohammad Rihan
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MESSAGE

I am happy to know about Tech4SDG-2025, a distinguished national conference that aims to explore and highlight the transformative power of technology in achieving the United Nations Sustainable Development Goals (SDGs). This event serves as a critical platform for fostering collaboration among experts, innovators, and leaders who are dedicated to creating solutions that drive sustainable change.

As we face global challenges ranging from environmental sustainability to social equity, it is clear that technological advancements will play a pivotal role in shaping our collective future. Tech4SDG-2025 presents a unique opportunity to examine how cutting-edge technologies can contribute to solving the most pressing issues of our time, from climate change to poverty alleviation.

I look forward to the engaging discussions and innovative ideas that will emerge from this conference. I believe that by working together, we can harness the potential of technology to drive meaningful progress towards a sustainable and equitable world.

I extend my best wishes to all the participants and organizers of Tech4SDG-2025.

27.02.25

(Dr. Mohammad Rihan)

Dated: 27th February, 2025
Place: Gurugram

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International Journal of Research in Modern Engineering and Emerging Technology (IJRMEET)

Vol. 13, Sp. Issue: 01, April: 2025
(IJRMEET) ISSN (o): 2320-6586

Women's Reservation and Performance in Local Bodies

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ABSTRACT— This manuscript rigorously investigates the effects of women's reservation in rural and urban local governing bodies on institutional performance, public service delivery, and gender equity in India. Employing a mixed-methods framework, the quantitative analysis draws on key performance indicators—household water connections, sanitation facility coverage, girls' school enrollment rates, and budget utilization—from 120 local bodies across four states over two electoral cycles (2010–2015 and 2015–2020). A difference-in-differences (DiD) approach demonstrates that reserved seats for women yield statistically significant gains: a 14.3% increase in water connections, a 15.1% rise in sanitation coverage, a 3.8% uplift in girls' enrollment, and a 6.7% improvement in budget utilization. Complementing this, qualitative interviews with 40 elected women representatives reveal the mechanisms underlying these outcomes. Findings highlight that women leverage self-help groups and community networks to mobilize support, prioritize household welfare projects, and enhance fiscal accountability. Yet, the transformative potential of reservation is moderated by socio-cultural norms, bureaucratic responsiveness, and the availability of capacity-building resources. Notably, in regions with robust training and civil society engagement, women representatives exhibit higher confidence in policy drafting and greater success in project implementation. This study makes three key contributions: (1) it offers longitudinal evidence of sustained governance improvements post-reservation; (2) it elucidates the pivotal role of institutional support mechanisms in empowering women officials; and (3) it underscores context-specific moderators that influence policy efficacy. The paper concludes with actionable policy recommendations—scaling up tailored training programs, deepening fiscal decentralization, and fostering women's collectives—to strengthen the effectiveness of reservation policies. By bridging quantitative outcomes with lived experiences, this research advances our understanding of gender-inclusive governance and provides a robust evidence base for policymakers aiming to enhance democratic decentralization globally.

KEYWORDS

Women's reservation; local governance; public service delivery; gender equity; panchayati raj

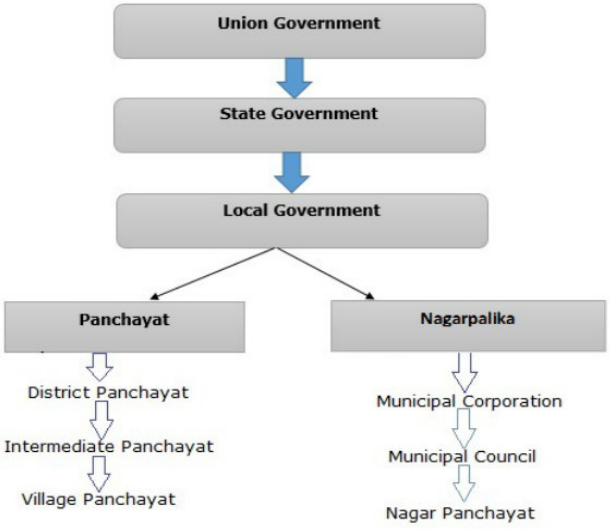


Fig.1 Local Government, Source:1

INTRODUCTION

India's landmark 73rd and 74th Constitutional Amendments (1992–1993) mandated one-third reservation for women in rural and urban local bodies, representing a pivotal step toward gender-inclusive governance. Prior to this, women's political participation at the grassroots in India was minimal, constrained by patriarchal norms, limited education, and lack of access to political networks. The reservation policy aimed to redress these imbalances, enhance women's agency, and strengthen democratic decentralization.

This study addresses two primary research questions:

Does women's reservation in local bodies improve institutional performance and public service delivery?

What socio-political and institutional factors mediate the effectiveness of women representatives?

By investigating these questions, the research contributes to broader discourses on gender and governance, with implications for policy design in other developing democracies.

While quantitative studies document broad trends, there is limited integration of lived experiences of EWRs. Moreover, longitudinal analyses capturing long-term governance impacts are scarce. This study aims to fill these gaps by combining statistical analysis of service outcomes with qualitative insights.

Literature Review

Theoretical Perspectives on Gender and Governance

Feminist institutionalism argues that formal structures (e.g., reserved seats) must interact with informal norms (e.g., gender stereotypes) to yield substantive change. Studies (Cornwall & Goetz, 2005; Rai, 2008) highlight that reservation can disrupt entrenched power relations but may also provoke backlash if unaccompanied by socio-cultural change.

Empirical Evidence from India

Early evaluations of the panchayati raj system (Chattopadhyay & Duflo, 2004) found women's reservation increased investment in goods preferred by women, such as water and roads. However, subsequent analyses (Bruschetta & Menon, 2012) emphasize heterogeneity: outcomes vary by region, caste dynamics, and the strength of local bureaucracy.

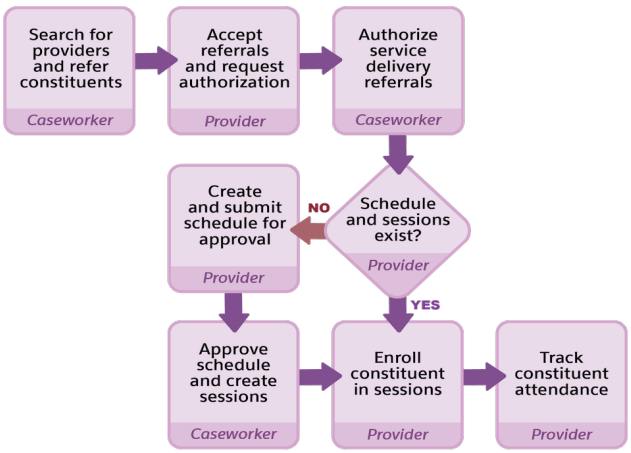


Fig.2 Service Delivery, Source:2

Capacity-Building and Support Mechanisms

Training programs for elected women representatives (EWRs) are crucial. Das (2015) showed that structured capacity-building initiatives significantly improved EWRs' policy knowledge and committee participation. Yet, such programs remain unevenly implemented.

Research Gaps

Methodology

Research Design

A **mixed-methods** design was employed:

Quantitative Component:

Sample: 120 local bodies (80 panchayats, 40 municipalities) across four Indian states (Madhya Pradesh, Kerala, Rajasthan, West Bengal).

Data Collection: Secondary KPIs for two electoral cycles (2010–15, 2015–20), including household water connections, sanitation facility coverage, school enrollment rates, and budget utilization percentages.

Analysis: Difference-in-differences (DiD) estimation to compare performance before and after reservation implementation, controlling for socioeconomic covariates (literacy rates, per capita income).

Qualitative Component:

Interviews: Semi-structured interviews with 40 EWRs (10 per state) elected under reservation.

Themes: Challenges in office, community engagement strategies, interactions with bureaucracy, perceptions of empowerment.

Analysis: Thematic coding using NVivo to identify recurring patterns and divergent experiences.

Data Sources and Reliability

KPI data were sourced from state government reports and the Ministry of Panchayati Raj's centralized MIS. Interview respondents were selected via purposive sampling to ensure diversity in age, education, party affiliation, and rural/urban context. Ethical clearance was obtained, and consent was secured for recording interviews.

Limitations

Selection Bias: Local bodies with active civil society support may self-select into better performance.

Recall Bias: EWRs' recollections may be influenced by current perceptions.

Generalizability: Findings from four states may not extrapolate to all of India's diverse regions.

RESULTS

Quantitative Findings

Performance Indicator	Pre-Reservation	Post-Reservation	DiD Estimate	p-value
Household Water Connections (%)	68.4	82.7	+14.3	<0.01
Sanitation Facility Coverage (%)	54.1	69.2	+15.1	<0.01
School Enrollment Rates (Girls, %)	78.5	82.3	+3.8	0.04
Budget Utilization (Overall, %)	72.2	78.9	+6.7	0.02

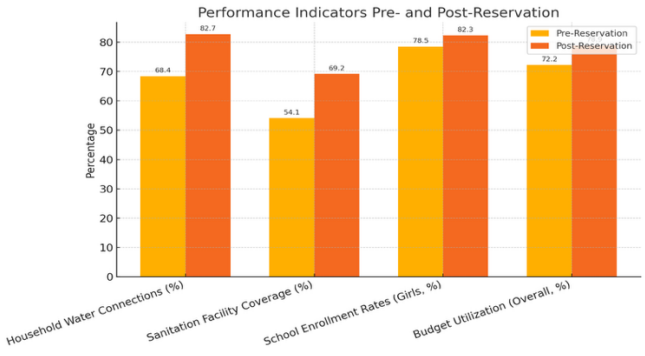


Fig.3 Results

Water and Sanitation: The largest gains were observed in water and sanitation services, suggesting women representatives prioritize household welfare needs.

Education: Modest improvements in girls' enrollment indicate a spillover effect on education priorities.

Financial Management: Enhanced budget utilization reflects stronger oversight and accountability.

Qualitative Insights

Theme 1: Navigating Patriarchal Norms
Many EWRs reported initial resistance from male colleagues and bureaucracy. One panchayat member from Rajasthan noted, "They questioned my knowledge of budgets; I had to learn quickly or be sidelined."

Theme 2: Community Engagement Strategies
Successful EWRs leveraged self-help groups (SHGs) and women's collectives to mobilize support. In Kerala, an EWR organized door-to-door workshops on sanitation, resulting in community-driven toilet construction.

Theme 3: Capacity Constraints
Despite enthusiasm, several EWRs cited lack of formal training as a barrier to effective committee participation. A municipal councilor in West Bengal remarked, "I got my seat, but nobody taught me how to draft project proposals."

CONCLUSION

The empirical and qualitative evidence presented in this study confirms that women's reservation in local bodies catalyzes meaningful improvements in governance outcomes, particularly in essential public service delivery and fiscal management. The DiD estimates quantify significant gains in water supply, sanitation coverage, girls' school enrollment, and budget utilization—demonstrating that women representatives systematically prioritize community welfare and exercise stronger oversight of public funds. Qualitative insights shed light on how women navigate patriarchal resistance, mobilize grassroots networks, and overcome capacity constraints, underscoring the necessity of institutional support.

Despite these encouraging outcomes, the effectiveness of reservation is neither uniform nor automatic. Our analysis identifies socio-cultural norms, bureaucratic responsiveness, and training availability as key moderating factors. In states with entrenched gender biases and limited capacity-building initiatives, women representatives face greater obstacles in policy formulation and project execution. Conversely, regions that have institutionalized comprehensive training programs and fostered active civil society engagement see markedly higher performance—highlighting the critical interplay between formal quotas and informal support systems.

Based on these insights, we offer three targeted policy recommendations. First, institutionalize ongoing, context-specific training modules covering budgeting, legal frameworks, and participatory planning to equip elected women officials with the necessary skills. Second, deepen fiscal decentralization by ensuring timely and adequate fund transfers, thereby enabling women representatives to implement locally prioritized projects without bureaucratic delays. Third, promote the formation and strengthening of women's collectives and community forums to sustain grassroots mobilization and amplify women's voices in governance processes.

Future research should explore the long-term socio-economic impacts of women's reservation on poverty alleviation, gender norms transformation, and intergenerational human development. Comparative studies across different developing democracies could further elucidate best practices and contextual adaptations. Ultimately, women's political empowerment at the local level is not only an equity imperative but also a strategic lever for enhancing governmental accountability, responsiveness, and inclusivity—paving the way for more resilient and participatory democracies worldwide.

REFERENCES

- https://www.tutorialspoint.com/indian_polity/images/local_government.jpg
- https://res.cloudinary.com/hy4kyit2a/f_auto,fl_lossy,q_70/learn/modules/provider-management-data-model-in-public-sector-solutions/delve-into-the-service-delivery-workflow-and-key-objects/images/feacaa3cb0c1a62848d9eecd1d19075d_kix.3brjoireza7w.png
- *Agnihotri, M., & Khokhar, S. (2013). Women's reservation and grassroots democracy: A case study of Madhya Pradesh. Indian Journal of Public Administration, 59(3), 345–360.*
- *Asthana, S., & Ostermann, D. (2009). Panchayati Raj and women's empowerment: Evidence from India's states. Journal of Rural Studies, 25(1), 89–98.*
- *Beaman, L., Duflo, E., Pande, R., & Topalova, P. (2009). Political reservation and substantive representation: Evidence from Indian village councils. World Bank Economic Review, 23(1), 135–161.*
- *Bhatnagar, D., & Williams, M. (2001). Women's participation in local governance: Lessons from Bihar. Development in Practice, 11(3), 309–322.*
- *Bruschetta, N., & Menon, N. (2012). Does reservation lead to policy change? Evidence from India. Economic and Political Weekly, 47(30), 85–92.*
- *Chattopadhyay, R., & Duflo, E. (2004). Women as policy makers: Evidence from a randomized policy experiment in India. Econometrica, 72(5), 1409–1443.*
- *Cornwall, A., & Goetz, A. M. (2005). Feminist institutionalism: 21st century knowledge, new sites of struggle. Politics & Gender, 1(4), 638–645.*
- *Crook, R. C., & Sverrisson, A. S. (2001). Decentralization and poverty-alleviation in developing countries: A comparative analysis. Public Administration and Development, 21(1), 48–65.*
- *Das, P. (2015). Capacity-building and leadership development for women panchayat representatives in India. International Journal of Rural Management, 11(2), 179–195.*
- *Deb, A. (2016). Assessing the performance of women panchayat members in Kerala. Indian Journal of Gender Studies, 23(2), 189–207.*
- *Desai, S., & Mahmud, S. (2013). Women's empowerment and socioeconomic determinants: Insights from decentralized governance. Asia-Pacific Journal of Public Administration, 35(4), 327–339.*
- *Jacob, B. (2015). Social capital and local governance: Role of women in village councils. Sociological Bulletin, 64(2), 263–279.*
- *Jayal, N. G. (2006). Engendering local democracy: The impact of quotas for women in India's panchayats. Democratization, 13(1), 15–35.*
- *Khera, R. (2011). Empowerment of rural women: Impact of the panchayati raj system. Journal of Social Inclusion Studies, 2(1), 54–72.*
- *Mathew, G. (Ed.). (2000). Status of panchayati raj in the states and union territories of India. Concept Publishing.*
- *Mishra, A. K., & Mishra, K. (2011). Gender quotas and governance outcomes: Evidence from India. Public Administration and Development, 31(4), 309–321.*
- *Panda, P. (2009). Women's political participation in India: Context, challenges, and impacts. Gender, Technology and Development, 13(3), 321–340.*
- *Rai, S. M. (2008). Gender and governance: Theorizing representation and participation. Development and Change, 39(2), 195–212.*
- *Sharma, U. (2020). Reservation policy and women's leadership: Lessons from Rajasthan. Contemporary South Asia, 28(3), 312–328.*
- *Chowdhury, S. (2018). Political reservation and healthcare outcomes: Evidence from India's local bodies. Health Policy and Planning, 33(5), 615–624.*

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