



Building Futures: Advancing Inclusion of Women Workers amid Automation in Construction

Policy Brief summarising findings from
a Participatory Action Research in Ahmedabad, Gujarat

Aajeevika Bureau | Work Fair and Free

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Introduction

The construction industry is central to India's growth, contributing nearly 9% to GDP and employing over 68 million workers, including 7.6 million women (India Employment Report, 2024). As the second-largest employer after agriculture since the 1990s, it has been sustained by migrant labour. **Yet women, integral to this workforce, remain concentrated in the lowest-paid, most precarious roles, their work invisible and undervalued.**

In recent decades, the construction industry has been witnessing a **shift towards automation and industrialisation, and gender disparities risk widening** through processes such as:

- ◆ Increased use of automated machinery
- ◆ Changes in concrete production methods
- ◆ Adoption of innovative formwork systems
- ◆ Use of new building materials
- ◆ Expansion of precast and prefabricated construction

The Issue: Increasing Exclusion of Women Workers

This brief draws on a feminist participatory action research (FPAR) conducted in Ahmedabad, Gujarat, between December 2023 and February 2025. The study highlights how automation alters construction processes and labour dynamics amid the infrastructure and real estate boom. **It focuses on the experiences of migrant women workers, documenting their daily struggles, barriers to upward mobility, exclusion from new technical roles, and strategies for coping with these shifts.**

Women workers—predominantly migrants from marginalised communities—are disproportionately affected as automation and industrialisation reshape the construction industry. **While their traditional roles (such as stone crushing, load carrying, and concrete mixing) disappear, they are excluded from training and opportunities in emerging roles.** This transition is widening the gender gap and reinforcing existing social inequalities, ultimately undermining the goals of inclusive growth and workforce diversity.

Key Findings

1. Rise of automation in Ahmedabad

- ◆ **Since the 2010s**, automation and industrialised construction have expanded, with precast accelerating after COVID-19.
- ◆ Prefab and modular construction, BIM, drones, and IoT devices are gaining ground, while robotics, 3D printing, digital twins, and AI remain experimental.
- ◆ **The shift is uneven across building and infrastructure projects**, but steadily reduces on-site labour demand.

2. Displacement of women workers

- ◆ High-rise, capital-intensive projects increasingly rely on long-distance male migrants, **marginalising Bhil Adivasis and women workers who have historically sustained the industry.**
- ◆ Women workers—predominantly circular migrants from Adivasi/ ST communities—face heightened precarity in incomes and livelihood security.
- ◆ **Technological changes, like innovative formwork, precast, and off-site construction, reduce labour-intensive processes** and disproportionately affect women workers, as briefly summarised in the table below:

Shifts	Women's traditional role	Impact of automation
Increased use of automated machines (cranes, hoists, pumps)	Material handling (carrying bricks, sand, cement)	~ 80% decline in women engaged in loading/ unloading and carrying tasks.
Automation of concrete production (batching plants and transit mixers)	On-site mixing and transporting concrete	~ 80% reduction in "helper" roles , predominantly performed by women workers.
Innovations in formwork (aluminium/ Mivan, steel, composite structures)	Helpers in masonry and plastering	Reduced slab cycle from 20 to 8 days; 40-50% decline in on-site workers ; minimal participation of women; tasks outsourced to specialised agencies providing their own trained male workforce.
Shift from clay bricks to AAC blocks	Moulding, carrying, drying bricks and feeding kilns as family labour	Very few women are absorbed in mechanised block factories in city peripheries, and are restricted to low-paying, loading, and cleaning roles.
Adoption of precast technology	Helpers in masonry and plastering	~ 80% decline in on-site workers , eliminating labour-intensive tasks such as masonry and plastering, where women are typically employed as "helpers." Women are restricted to cleaning roles in off-site factories.

3. Women's exclusion from "skilled" and emerging roles

- ♦ Women are systematically excluded from roles considered "skilled" or "risky," **despite their tacit knowledge and years of experience.**
- ♦ **Machine operation and training in new technologies are reserved for men,** reinforcing occupational segregation.
- ♦ Women workers remain confined to low-paid, peripheral roles with no upward mobility.

*"As a woman, you shouldn't touch machines." –
Deepti**

*"You are only meant to be a helper." – Suguna ben**

"This is not your work." – Savitaben
(*Names changed)*

Women are constantly rebuked by supervisors and contractors and denied opportunities to learn new technical skills.

4. Persistent gender wage disparities

- ♦ Women earn 10-20% less than male "helpers" and 40-50% less than male "skilled workers" from the same regions.
- ♦ Wages are typically paid to the male worker, rendering women's labour invisible and underpaid.
- ♦ **Payments below the statutory minimum wage** are widespread, perpetuating economic insecurity.

5. Perceptions of women as a "liability" and discriminatory hiring

- ♦ Employers and labour contractors often view women workers as a **compliance burden** due to sanitation, childcare, and safety obligations.
- ♦ "Jodi" system recognises men as "skilled" workers, relegating women to "helper" roles.
- ♦ **Single and widowed women face explicit hiring discrimination.**

*"We don't want to spend energy on matters like harassment and women's safety. All that matters is the work being done." –
Supervisor at a precast yard*

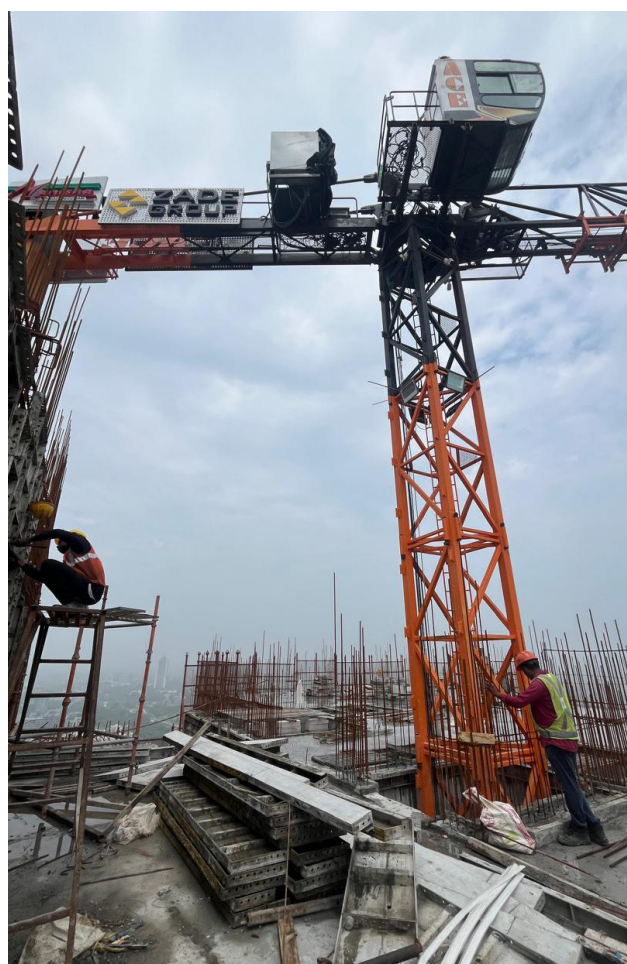
6. Care burdens and institutional exclusion

- ♦ Women shoulder **disproportionate unpaid domestic and care work, without state or employer support,** limiting their participation.
- ♦ Layers of subcontracting widen the distance between workers and principal employers, weakening accountability for wages, safety, and welfare. **This invisibility denies women access to entitlements, grievance redressal, and even recognition of their labour.**

Policy Imperatives for Inclusive Construction

The shift towards automation and industrialised construction must not come at the cost of women's exclusion. As male workers dominate new "skilled" roles, women are restricted to peripheral roles or risk displacement. **Proactive government interventions are essential for an inclusive world of work to:**

- ♦ **Prevent displacement:** Training women workers in new technologies and skilled trades and enabling them to enter technical and supervisory roles will raise incomes and expand the labour pool.
- ♦ **Leverage public investment for social good:** With most infrastructure and housing projects publicly funded, the government can set targets for women's employment and monitor compliance to drive inclusion.
- ♦ **Enhance workplace safety and social protection:** Ensuring social protection and safe work sites with crèches, sanitation, and grievance redressal will improve productivity and retention.
- ♦ **Uphold constitutional and legal mandates:** Equality and protective measures for women are enshrined in the Constitution and labour laws. Affirmative action is necessary to translate these rights into reality and improve female labour force participation.
- ♦ **Align with global commitments:** Advancing women's role in construction delivers on the SDGs, CEDAW, and ILO conventions, and signals India's inclusive growth to global investors.



Recommendations

Automation in construction, coupled with entrenched gender hierarchies, is reshaping work in ways that disproportionately exclude women workers from “skilled” and remunerative roles. Stark wage gaps, lack of basic amenities, and weak social protections further limit their participation. **The state must act decisively, combining effective regulation, skilling opportunities, and a comprehensive care infrastructure to ensure women’s access to decent work and upward mobility.** Without proactive interventions, automation risks deepening gendered exclusion and derailing India’s commitment to inclusive growth and gender equity.



Snigdha

1. Invest in women’s skilling and inclusion

- ◆ Launch **gender-responsive skilling and on-the-job training in emerging technologies** and skilled trades in collaboration with construction companies and civil society.
- ◆ Set **targets for women’s employment** in publicly funded projects and monitor compliance.

2. Guarantee social security and portability

- ◆ Ensure the cess collected under the BOCW Act, 1996, is **optimally utilised** by the state welfare boards for social security and welfare measures.
- ◆ **Universal registration** under the Gujarat BOCW welfare board with portability for inter-state migrants.
- ◆ **Extend Employment State Insurance Corporation (ESIC) coverage** and portability for all construction workers.
- ◆ Guarantee maternity protection for women construction workers by providing 26 weeks of **paid leave and wage compensation, funded through BOCW welfare boards**, along with financial support for pregnancy, postnatal recovery, and childcare.

3. Enforce workplace safety, equality, and dignity

- ◆ Conduct regular inspections to **monitor the provision of on-site crèches and WASH facilities**, workplace safety, and **payment of minimum and equal wages**.
- ◆ Strictly implement the Sexual Harassment of Women at Workplace (POSH) Act, 2013, and **establish accountable, accessible Local Committees (LCs)** for informal women workers.
- ◆ Ratify the **ILO Convention 190** to eliminate violence and harassment at the workplace.

4. Strengthen the accountability of employers and contractors

- ◆ Tighten the registration and **regulation of principal employers and contractors** under the Contract Labour Act, 1970, and the Inter-State Migrant Workmen Act, 1979.
- ◆ Effective implementation of the Minimum Wages Act, 1948, Payment of Wages Act, 1936, and Equal Remuneration Act, 1976.
- ◆ Establish **accessible grievance redressal mechanisms, like a labour helpline**, to address violations.

Aajeevika Bureau, Ahmedabad

Aajeevika Bureau is a pioneering organisation dedicated to protecting the rights and well-being of migrant and informal workers. With a long-standing presence in western India, we support workers through legal aid and education, accessing entitlements, skilling, collectivising, and community-based solutions that strengthen their dignity and security.

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Work Fair and Free, Bangalore

Work Fair and Free (WFF) is a knowledge institution committed to making informal labour migration more secure and dignified. Founded in 2022 and incubated by Aajeevika Bureau, we combine research, grassroots interventions, and capacity-building to influence policy and practice on labour and migration in India.

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