Driving Energy Transition: Workforce, Skills, and Gender in India's Renewable Energy Sector

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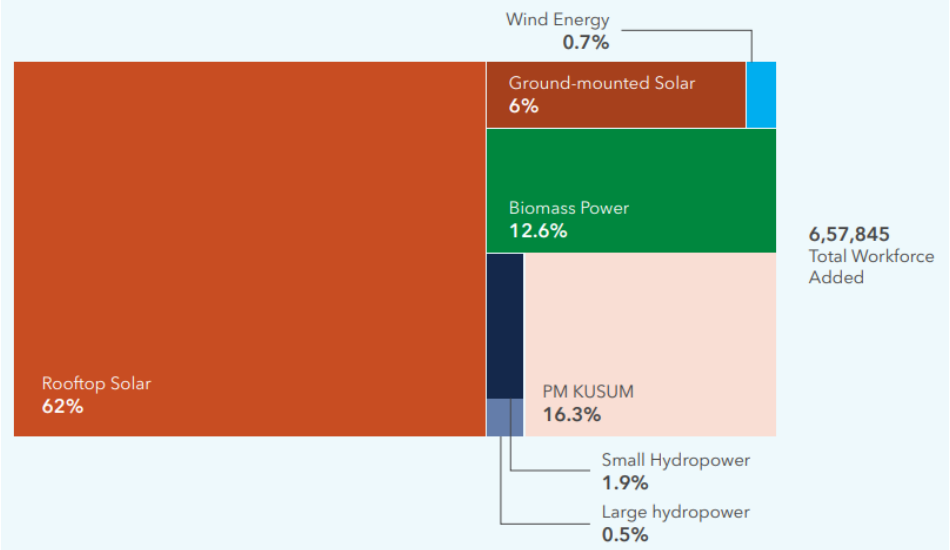
Introduction

India's transition towards renewable energy is creating opportunities not only to expand clean energy capacity but also to generate employment and develop new skills. This report by CEEW and NRDC examines the workforce implications of India's renewable energy expansion, focusing on employment generation, skill requirements and women's participation. Drawing on an industry survey conducted during 2024–25, it estimates employment across different renewable energy technologies and stages of project development.

Renewable Energy as a Source of Employment

The report estimates that achieving India's target of 500 GW of non-fossil fuel capacity, alongside the objectives of the National Green Hydrogen Mission, could generate more than 44 lakh full-time equivalent (FTE) jobs. Between FY 2023 and FY 2026, approximately 6.58 lakh workers were added across selected clean energy sectors, including solar, wind, biomass and hydropower. Rooftop solar accounted for 62 per cent of these workforce additions, emerging as a significant source of employment.

The report also highlights differences in employment intensity across renewable energy technologies. Rooftop solar generates approximately 44 times more employment per megawatt than utility-scale solar, reflecting the larger workforce required for installation across individual homes, buildings and businesses.



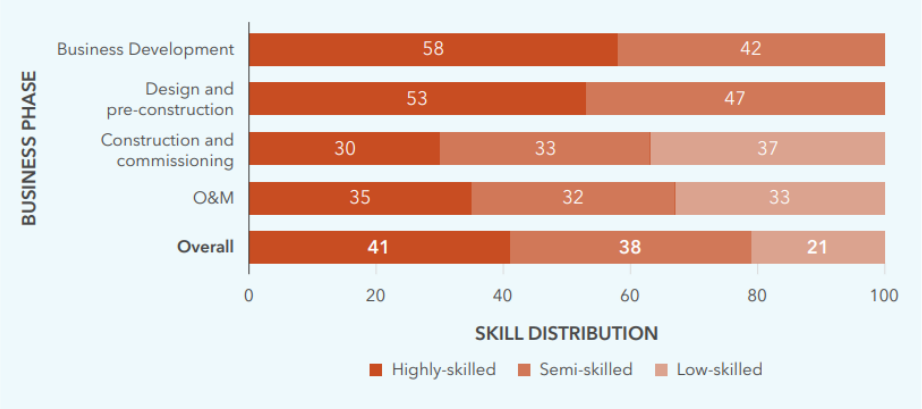
Skills Required for the Clean Energy Workforce

The report finds that around 60 per cent of jobs in clean energy project deployment require highly skilled or semi-skilled workers. The requirement is even greater in manufacturing, where approximately 80–90 per cent of jobs fall into these categories. This points to the growing importance

of technical training, practical exposure and specialised capabilities across solar, wind and other renewable energy sectors.

The report also highlights the need for continuous learning and career progression. As renewable energy technologies and industry requirements evolve, training institutions and companies need to create pathways that enable workers to progress from low-skilled to semi-skilled and highly skilled roles.

Figure 9: Distribution of Skill Levels Across the Rooftop Solar Sector



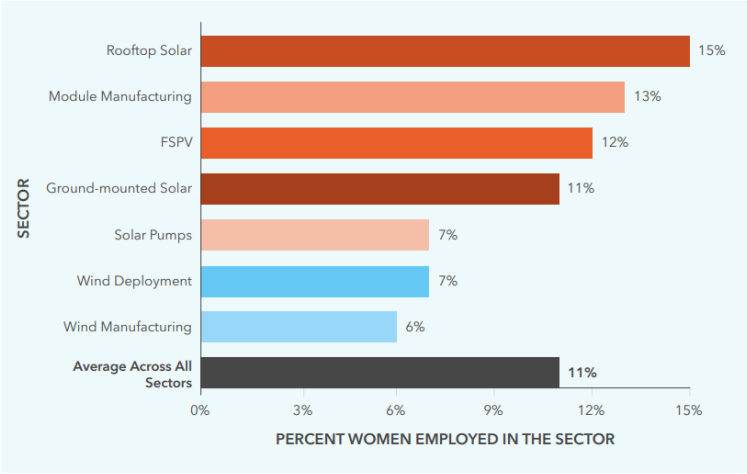
Source: CEEW-NRDC Analysis, 2026

Women's Participation in the Renewable Energy Sector

Despite the sector's employment potential, women's participation remains limited. Women account for only 11 per cent of the workforce across the surveyed solar and wind deployment and manufacturing sectors. Further, approximately **62 per cent of women** employed in these sectors work in non-technical roles such as human resources, accounting and administration.

The findings highlight the need to expand women's access to technical occupations and leadership positions. The report points to workplace safety, flexible working arrangements and targeted inclusion initiatives as important measures for improving women's participation in the clean energy workforce.

Figure 25: Representation of Women in the Workforce Across Clean Energy Sectors



Source: CEEW-NRDC Analysis, 2026

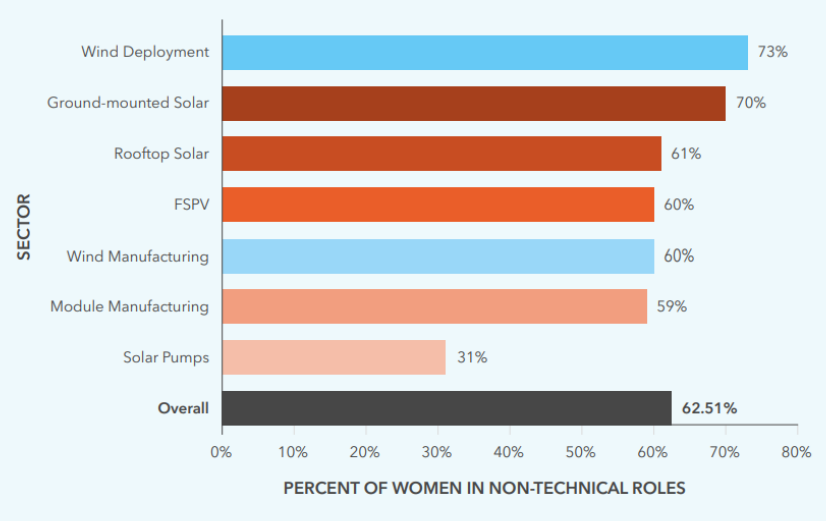
Building a Workforce for India's Energy Transition

The report emphasises that achieving India's renewable energy ambitions will require stronger coordination between government institutions, industry and training providers. It recommends

institutionalising workforce data collection through existing government processes, including subsidy disbursements, tenders and regulatory frameworks. Better workforce data can help identify emerging skill requirements and inform training programmes.

It also calls for stronger partnerships between clean energy companies and training institutions to improve practical learning, align curricula with industry requirements and create opportunities for career advancement. These measures are important to ensure that employment opportunities generated by the energy transition translate into sustainable livelihoods.

Figure 26: Representation of Women Workers in Non-technological and Technological Roles Across Clean Energy Sectors



Source: CEEW-NRDC Analysis, 2026

Key Learnings and Recommendations

The report highlights that India's renewable energy transition is also a significant workforce development opportunity. While the sector could generate over **44 lakh FTE jobs**, realising this potential will require investment in technical and semi-skilled training, stronger industry–training partnerships and better workforce planning.

It also draws attention to the limited participation of women in technical roles and the need for more inclusive workplaces. By strengthening skill development, improving employment data and creating pathways for women's participation and career progression, India can ensure that its clean energy expansion contributes not only to climate goals but also to employment generation and inclusive economic growth.

Read More: [Driving Energy Transition: Workforce, Skills, and Gender in India's Renewable Energy Sector]

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