

THE ROLE OF WOMEN IN ACHIEVING SDG 9 – INDUSTRY, INNOVATION AND INFRASTRUCTURE

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ABSTRACT

This paper deliberates on the role of women in achieving the SDG 9 – Industry, Innovation and Infrastructure. Ever since the inception of SDG index, India has made progress. Particularly, women role is pervading in the achievement of all SDGs, but NITI Aayog has highlighted the role of women in certain SDGs through elaborate discussion while a few SDGs such as SDG 9, the discussion of the role of women is sporadic. So, authors felt the need to review the role of women in achieving the SDG 9. This is incorporated for economic expansion, education, entrepreneurship, self-help groups and gender policy. Additionally, the role of UN in the participation of women in SDG 9 is cited as Safe cities, SafetiPin and MSME. The paper concludes that without the inclusion of women as equal participants, none of the SDGs will be achieved

KEYWORDS: Role of women, Achievement of SDG 9, Challenges in industry, innovation and infrastructure

INTRODUCTION

India's dedication to the Sustainable Development Goals (SDGs) since embracing the 2030 Agenda for Sustainable Development is seen in the coordinated initiatives on SDG localisation led by NITI Aayog, which collaborates closely with States and Union Territories (UTs). NITI Aayog has collaborated with States and Union Territories (UTs) to institutionalize the Sustainable Development Goals (SDGs). This involves not only conceptualising sustainable development as a separate or parallel framework, but also integrating them into national and subnational development thinking through institutional ownership, collaborative competition, capacity building, and adopting a whole-of-society approach.

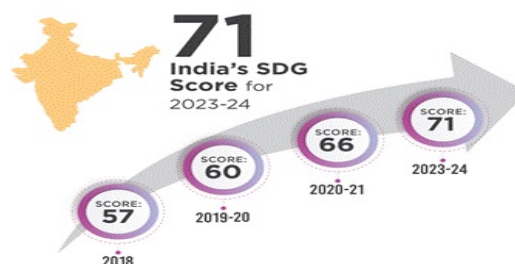


Figure 1: Progression of SDG Score.

India has made significant advancement in a number of critical SDGs since 2018. Goals 1 (No Poverty), 3 (Good Health and Well-being), 6 (Clean Water and Sanitation), 7 (Affordable and Clean Energy), 9 (Industry, Innovation and Infrastructure), and 11 (Sustainable Cities and Communities) have all made substantial progress. The improvements have been substantially influenced by the government's emphasis on the provision of food and nutrition security, health, education, electrification, housing for all, sanitation, and clean cooking fuel and energy.

In order to achieve SDG 9 - Industry, Innovation, and Infrastructure, the Skill India Mission has resulted in the training and up skilling of over 1.4 core youth and the reskilling of 54 lakh youth.

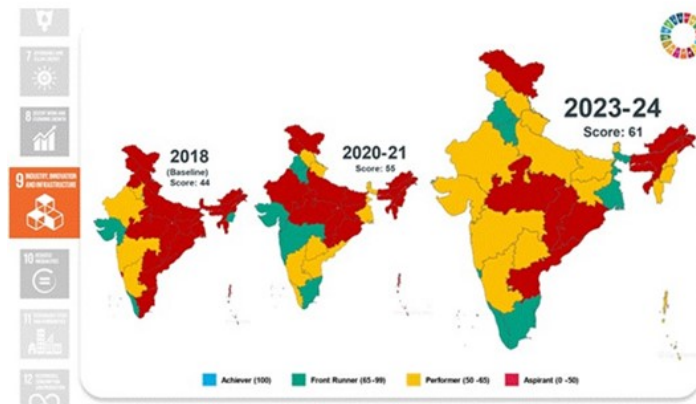


Figure 2: Progression of SDG 9 Score.

- Increase in score from 41 in 2018 to 61 in 2023-24
- An increase from 47.38% in 2017-18 to 99.70% of all targeted habitations are now connected with all-weather roads under the Pradhan Mantri Gramme Sadak Yojana.
- A minimum of one mobile phone is owned by 93.3% of households.
- 3G/4G mobile internet coverage is available in 95.08% of villages.

The majority of the SDGs (2, 5, 8, 10) explicitly emphasise the role of women, with the exception of SDG 9 and a small number of other SDGs (SDG - NITI Ayog Report, 2024, pp 250 - 251). Therefore, we have addressed this matter - Women and SDG 9 - in order to deliberate on the role of women in Infrastructure, Innovation, and Industry.

SDG 9 IN INDIA

SDG 9: Promote Inclusive and Sustainable Industrialisation; Foster Innovation; Develop Sustainable and Resilient Infrastructure for transportation.

Over the past few years, there has been a significant increase in investment in transport, including road, railway, maritime, and aviation. To elaborate, capacity addition projects are currently underway: New terminals are being constructed and announced. To list a few, Enayem or Colachel near Trivandrum, Sagar in West Bengal, and Vizhinjam in Kerala. There is an emphasis on the improvement of air connectivity to Tier II and Tier III cities. Over 600 kilometres of highways were constructed in 2023, and the objective for this year is to construct 15,000 kilometres.

- *Atal Innovation Mission:* The mission has been implemented through three main initiatives. i) Tinkering Labs: Tinkering laboratories will provide students with do-it-yourself kits that will enable them to learn while conducting various experiments and attempting to identify or develop products that would resolve their issues. ii) Atal Incubation Centres: These are innovation laboratories at higher learning institutions that are driven by technology. Colleges, engineering colleges, universities, research and development institutions, and industries are all eligible to establish it. These can be established by engineering colleges, higher educational institutes, and R&D centres. iii) Atal Grand Challenge: The Grand Challenge Scheme is a global initiative that encourages innovators, researchers, and entrepreneurs to develop solutions to a problem that has been identified in the country. The problem must be distinctive, applicable to Indian conditions, scalable, and address the issue that the general population is experiencing. Following challenges have been identified for extensive deliberation.
- *Challenges in Industry and Infrastructure:* The trade industry is essential for the development of a prosperous economy, which is characterised by job growth, strong partnerships, and a broader range of product availability. The calibre of trade and transport infrastructure has not been enhanced. It has maintained a consistent ranking of 2.91 out of five.
- *Challenges with Innovation:* Scientific innovation necessitates an expansion of the research and development budget. However, the expenditure on research and development has not shown any recent improvement, with a range of 0.6% to 0.7%. In 2018, the number of scientific or technical journal articles published was 0.10, a decrease from 0.9 in 2017. The objective is to achieve a ranking of 1.2. Nuclear technology, nanotechnology, and the technology-driven Green Revolution are all disciplines with significant growth potential. However, this would necessitate an expansion of the public sector's research and development sector.
- *Improvements in Innovation:* Education and universities play a significant role in the consistent innovation of their respective countries, and India has already made progress in this regard. India's best three universities achieved a score of 44.9 in the World University Rankings as of 2020. This is exceedingly near to the ultimate objective of attaining a score of 50. Widespread internet access has also facilitated the improvement of education for all by increasing the accessibility of information. The percentage of Indians who utilise the internet has increased from 17% in 2015 to 34.45% in 2017. Since the implementation of the sustainable development objectives, it has doubled.
- *Improvements in Infrastructure:* Accessibility has been significantly improved in numerous rural regions of India. In 2017, 70% of the focus was on rural areas to provide them with access to all-weather roads. In general, the total length of national highways has increased by over twofold, from 4,410 kilometres in 2015 to 10,824 kilometres in 2019. This represents an enormous surge in the focus on infrastructure and its potential to enhance a nation's connectivity.
- *Improvements in Industry:* Additionally, it has prioritised the facilitation of entry into the business sector, as well as the promotion of growth and the establishment of new enterprises, in order to achieve SDG Goal 9 in India. In order to enhance its standing in the World Bank's Ease of Doing Business index, the nation has implemented business reform. Consequently, in 2019, it fell from the 142nd position in the world classification in 2015 to the 63rd position. Additionally, there has been a substantial increase in the development and design of products. From 2015 to 2019, the quantity of design patents increased by fourfold. This is a precursor to the expansion of the industry.

In general, India has made significant progress in its pursuit of SDG Goal 9. Between 2018 and 2019, it has experienced an average growth of 7.2% in its gross domestic product. India has also maintained its commitment to the sustainability and environmental friendliness of the industry, innovation, and infrastructure. It has achieved one of the lowest per capita carbon emissions in the world.

Sustainable Development Goal 9 (SDG 9) is founded on three interconnected pillars: infrastructure, industry, and innovation. The objective of attaining socially inclusive and environmentally sustainable economic development is shared by all of these pillars. SDG 9 is closely associated with other SDGs that address job creation, sustainable livelihoods, enhanced health, technology and skills development, gender equality, food security, green technologies, and climate change. It has approximately 20 targets and indicators that are directly related to its three pillars.

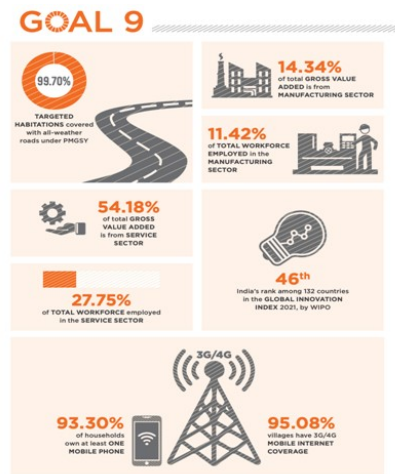


Figure 3. Interconnected Pillars of SDG 9 and its Achievement.

ACHIEVEMENT OF SDG 9 IN INDIA

- *What is the extent of our progress?* In 2022, 95% of the global population was within the reach of a mobile broadband network; however, certain regions continue to be underserved. The global investment in research and development, as well as the financing of economic infrastructure in developing countries, has increased.
- *What actions are required?* Investments in advanced technologies, reduce carbon emissions, and increase mobile broadband access are essential to achieve Goal 9 by 2030.
- *What are the reasons for my concern?* The enhancement of the standard of living for numerous individuals is a consequence of the expansion of new industries. The environment will benefit when industries prioritise sustainability.
- *What is the cost of inaction?* Costly. The failure to enhance infrastructure and encourage technological innovation could result in inadequate sanitation, poor health care, and restricted access to education.
- *In what ways can we be of assistance?* Consider the influence of industry on your life and well-being, and utilise social media to advocate for policymakers to prioritise the SDGs.

Interconnections with Other Sustainable Development Goals

SDG 9 is interconnected with numerous other goals and objectives, such as industry-related targets related to food security, sustainable livelihoods, and job creation. In addition, innovation is necessary for the delivery, distribution, and consumption of energy, food, water, and accommodation. Additionally, access to ICTs is essential for the achievement of SDG 4 (quality education), SDG 8 and SDG 10 (reduced inequalities), among other objectives.

ROLE OF WOMEN

Women are instrumental in the attainment of the Sustainable Development Goals (SDGs), which include SDG 9 on infrastructure, innovation, and industry:

- *Economic expansion*: The growth and development of a nation are significantly influenced by the contributions of women. By 2025, India's GDP could increase by 16% as a result of enabling women to participate in the economy on a par with men.
- *Education*: Girls who receive an education are more empowered and contribute to a more robust workforce. SDG 1 (No poverty) can be achieved by investing in education for females.
- *Entrepreneurship*: The climate crisis can be mitigated by supporting women-owned businesses in growth-oriented sectors, despite the challenges they encounter.
- *Self-help groups*: Rural women's socioeconomic development can be enhanced through their participation in self-help groups and microcredit programs.
- *Gender policy*: Female leaders are enthusiastic about the study of gender, leadership, and the Sustainable Development Goals. They are of the opinion that feminist leadership is essential for the successful realization of the SDGs by 2030.

Infrastructure (roads, bridges, and facilities) is the foundation upon which economic development is built, enabling businesses to operate and individuals to access essential services. Infrastructure must be resilient to future hazards and sustainable in its construction and use, including the implementation of environmentally sound technologies. Gender dimensions must be considered in all aspects of planning, construction, and financing to ensure that women have access to the necessary facilities and services to fulfill their requirements and rights. In numerous countries, particularly those that are less developed, the transition from agriculture to industry is the means of achieving higher standards of living and more lucrative employment opportunities. Innovation and enhanced technology are essential for both new and established industries to pursue sustainable paths. Investments in research and development will be crucial; however, the majority of researchers are still male, with women comprising only 25% of the workforce in more advanced Organisation for Economic Co-operation and Development nations. Similarly, the construction, manufacturing, and energy sectors are significantly deficient in terms of gender balance, as they have a limited number of female employees and decision-makers. Women must have equal opportunities to contribute to the development of a sustainable future, regardless of their location, from the factory floor to the high-tech lab.

Additionally, UN Women sponsored the attendance of five delegates at the Safe Cities Global Leaders' Forum, which was conducted in New Delhi, India from June 10 to 12, 2015. The international knowledge base on secure cities for women and girls was advanced through the exchange and discussion of evidence-based approaches, practices, tools, and learning's at the global meeting. The Safe City Programme is designed to prevent and address sexual harassment and other forms of sexual violence against women and girls in public spaces. Additionally, delegates were able to deliberate on the priority areas for safe city policy and program actions, with a particular emphasis on national accountability and sustainability, which is in alignment with SDG 11 on Safe Cities.

UN has assisted in the training of illiterate elderly women from rural communities in a variety of geographic regions to become solar engineers through the Barefoot College in India.. UN Women is also a member of the Global Alliance for Clean Cook Stoves, which promotes the development of a global market for household culinary devices that are both clean and efficient. The SEED Initiative, a global partnership for action on sustainable development and the green economy, has rewarded numerous renewable energy initiatives involving women since 2011, and UN Women has sponsored the Gender Equality Award. Also, there are plans to implement additional renewable energy initiatives.

Applications that are gender-sensitive and enhanced on top of the infrastructure layer are essential, as are policy interventions that address long-term structural biases. For example, the "SafetiPin" application in India could assist women in navigating the city with less risk, thereby addressing issues related to sexual harassment and enhancing security (see section 5.4.3). In addition, similar applications could offer local governments and administrators the aggregated data from their users to enhance services and make cities safer for women (SafetiPin,n.d.).

However, women can be instrumental in enhancing the accessibility and utilization of broadband networks in underserved regions. Wireless for Communities (W4C) in India encouraged the development of wireless women entrepreneurs and network engineers in communities to facilitate the transmission of knowledge and the creation of local content. This initiative contributed to the empowerment of women and the establishment of secure environments, while also increasing the social viability of these networks by demystifying technology and transferring control, management, and ownership of the technologies to the community(Srivastava,2018).

In order to realize the Sustainable Development Goals (SDGs) by 2030, women entrepreneurs are proactive agents of change. The number of women and men who own and manage microenterprises and small and medium enterprises (SMEs) remains significantly different, despite recent progress in promoting women's entrepreneurship. The present and future approaches to balance the playing field for women-owned enterprises can be influenced by the extensive field of research and the existing lessons learnt.

CONCLUSION

Rather than emphasizing high-growth firms, it is more beneficial to provide assistance to women-owned small and medium-sized enterprises (SMEs) in sectors that are experiencing growth. Women entrepreneurs are over-represented in low-technology industrial sectors with lesser profit margins, such as the food, garment, textile, and leather sectors, as well as in service and retail. A comprehensive, multifaceted strategy is advantageous when aiding women-owned small and medium-sized enterprises (SMEs). Occasionally, stakeholders are compelled to determine whether to concentrate on a single set of measures that are implemented across multiple sectors and subsectors, or to provide a comprehensive array of measures within a single value chain. It is evident that the more advantageous alternative is to implement a comprehensive

array of measures within a single value chain.

Strengthening women-owned small and medium-sized enterprises (SMEs) is both ethical and prudent in response to the climate crisis. The connection between female entrepreneurship and the promotion of more inclusive, ecological, and intelligent growth has frequently been overlooked. In reality, women appear to be more inclined towards ecological industries than towards traditional ones. For instance, the renewable energy sector employs a greater proportion of women than the fossil fuel sector, with 32% of women employed versus 22% in the latter. Additionally, research conducted by the United Nations Industrial Development Organisation (UNIDO) indicates that women entrepreneurs are more likely to establish and expand their enterprises in green industries than in conventional industries.

Consequently, women-owned MSMEs have a significant potential for innovation, development, and the mitigation of the effects of climate change and environmental degradation. In order to accelerate the transition to green, climate-neutral, and net-zero industries and economies, it is imperative that we fully leverage the capabilities of women as innovators, administrators, and entrepreneurs. By socialising the invisible and unpaid care labour, public investment spending in social infrastructure could increase the rate of female labour force participation and generate public employment in labor-intensive social services. Gender equality is a cross-cutting development issue that will not be realized unless it is addressed in a multidimensional manner. Without the inclusion of women and girls as equal participants, none of the SDGs will be achieved.

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