

## **India and SDG 4: Measuring Educational Progress Through Indicators and Insights**

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### **ABSTRACT**

This study evaluates India's progress toward achieving Sustainable Development Goal 4 (SDG 4), which aims to ensure inclusive and equitable quality education and promote lifelong learning by 2030. Adopting a mixed-methods approach, it combines quantitative analysis of national and national data with qualitative insights from policy reviews and stakeholder perspectives. The findings indicate notable improvements in enrolment rates, infrastructure, and policy reforms—particularly through the Right to Education Act and the National Education Policy (NEP) 2020. However, significant challenges persist, including disparities in access, poor foundational learning outcomes, and limited inclusion of marginalized groups. These gaps hinder the realization of SDG 4 targets. The study offers targeted policy recommendations such as equity-based funding, inclusive pedagogy, teacher capacity building, and community engagement. By highlighting both achievements and persistent barriers, the research contributes valuable insights for policymakers and stakeholders striving to enhance educational equity and quality in India.

**Keywords:** *Sustainable Development Goals (SDGs), National Education Policy (NEP) 2020, Quality education, NITI Aayog, United Nations, 2015.*

### **1. Introduction:**

Education is a fundamental driver of sustainable development, playing a transformative role in improving quality of life and addressing pressing global challenges. Sustainable Development Goal 4 (SDG 4) aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" by 2030 (UN Statistics Division). As a cornerstone of the global development agenda, SDG 4 emphasizes access to quality education for all individuals, regardless of background, thereby helping to the reduction of inequalities within the country and among the countries (Mariyam, 2022).

Special attention is given to marginalized groups, including children with communication disabilities in underserved communities, ensuring they receive tailored support to meet their specific needs—thus advancing social inclusion and overall well-being. Higher education institutions also play a crucial role in achieving SDG 4 by promoting equal access to tertiary education, fostering lifelong learning, and driving research and innovation for societal progress (Maia, 2021). Moreover, the integration of digital education technologies has

emerged as a strategic tool to support SDG 4 by enhancing learning outcomes, bridging gender gaps, and ensuring access to high-quality, inclusive educational content (Agung, 2023).

In India, the implementation of SDG 4 is coordinated by NITI Aayog, which has developed strategic frameworks, including the Three-Year Action Agenda (2017–18 to 2019–20), a 15-year vision, and a corresponding seven-year strategy, to align national agendas with global educational goals (NITI Aayog). Through these efforts, India is striving to create an inclusive, equitable, and quality-driven education system that supports sustainable development at all levels.

## **2. Research objectives**

1. To assess India's progress on key SDG 4 indicators between 2015 and 2025 using national and international data sources.
2. To examine the major challenges and bottlenecks hindering the achievement of SDG 4 in India.
3. To suggest policy measures that can enhance the pace of achieving inclusive and equitable quality education aligning with SDG 4.

## **3. Research problem**

The research problem is to assess India's progress, challenges, and opportunities in achieving SDG 4.

## **4. Research Designs/Methodology**

The study adopts a mixed-methods research design, integrating both descriptive and analytical approaches. Quantitative analysis is employed to examine trends and progress in key SDG 4 indicators in India from 2015 to 2025, drawing on secondary data from national and international sources. Qualitative analysis is employed to assess relevant policy measures and explore the challenges hindering progress. This approach enables a comprehensive understanding of India's achievements, existing gaps, and future directions in advancing inclusive and equitable quality education. The structure of the paper is as follows: Section 5 presents the literature review; Section 6 provides the discussion, which includes an overview of SDG 4 targets and indicators, an investigation of India's progress based on key indicators, identification of key challenges to achieving SDG 4 by 2030, and an examination of policy interventions; and Section 7 offers the conclusion.

## **5. Literature Review**

The global discourse on Sustainable Development Goal 4 (SDG 4), which seeks to ensure inclusive, equitable, and quality education for all by 2030, has highlighted both achievements and persistent challenges. While there has been progress in expanding access to education globally, deep-rooted disparities continue to affect marginalized and socioeconomically disadvantaged groups (Wulff, 2020; Singh, 2024). The COVID-19 pandemic further exacerbated these inequalities by disrupting learning and widening the digital divide. Moreover, despite rising enrolment rates, learning outcomes remain suboptimal, with many students lacking basic literacy and numeracy skills (Singh, 2024). Methodological issues in data collection across some countries also hinder accurate assessment of progress, complicating global monitoring efforts (Babović et al., 2024). These concerns underline the urgency for targeted interventions, enhanced data systems, and inclusive policy reforms in the global pursuit of SDG 4.

A growing body of literature examines India's progress and challenges in achieving Sustainable development goal 4 (SDG 4), which seeks to ensure inclusive and equitable quality education for all. Despite notable achievements—such as increased primary school enrolment and improvements in female literacy (Singh, 2024)—several persistent issues hinder progress. These include poor learning outcomes, inadequate foundational literacy and numeracy skills, and widening educational inequalities, particularly exacerbated by the COVID-19 pandemic. Socioeconomic disparities, teacher shortages, insufficient training, and weak school infrastructure continue to marginalize vulnerable communities (Singh, 2024; Satapathy et al., n.d.; Mahananda, 2024).

Studies emphasize that structural and systemic barriers remain embedded in India's educational framework. Satapathy et al. (n.d.) and Mahananda (2024) advocate for curriculum modernization, stronger digital integration, and enhanced teacher preparation, particularly in rural areas where disparities in infrastructure and learning resources are most pronounced. Jena (2024) highlights deficiencies in teacher education programs, including limited internships and outdated pedagogical approaches that do not align with contemporary educational needs. Similarly, Chand (2024) calls for targeted strategies to bridge urban–rural gaps and to develop more inclusive, quality-focused, and responsive educational systems.

India's legislative efforts, most notably the **Right to Education Act (2009)**—enacted under the 86th Constitutional Amendment—sought to guarantee free and compulsory education for all children aged six to fourteen. This act institutionalized education as a fundamental right (Article 21A) and reflected the nation's commitment to democratic ideals, equity, and social welfare (Dubey, 2010; Saini, 2016; Garg et al., 2022). It explicitly prohibited expelling or holding back children until the completion of elementary education, aiming to reduce economic barriers to schooling (Dem, 2019; Yadav, 2012). However, implementation has been constrained by entrenched socio-economic inequalities and discriminatory cultural practices (Grewal & Singh, 2011; Choudhury et al., 2023).

The **National Education Policy (NEP) 2020** aims to address these systemic shortcomings by envisioning a holistic transformation of the education sector. It emphasizes multidisciplinary learning, digital inclusion, teacher development, and equity-driven reforms, with the goal of fostering skilled, socially responsible citizens while preserving India's cultural heritage (Rangarajan et al., 2023; Beerannavar & Pancrasius, 2024).

While the existing literature offers valuable insights into global and national efforts to achieve SDG 4, a critical need remains for empirical analysis that aligns directly with the official indicators and targets outlined by the United Nations. This research attempts to fill that gap by evaluating India's performance using selected core indicators that reflect access, quality, equity, and infrastructure in education. By drawing on national data sources such as UDISE+, ASER, and the SDG India Index, this study aims to offer a comprehensive, indicator-based assessment of India's progress from 2015 to 2025, highlighting key achievements, regional disparities, and policy challenges.

## **6. Discussions**

### **6.1. Understanding SDG 4: Targets and Indicators**

#### **Goal Statement:**

Sustainable Development Goal 4 (SDG 4) aims to “*ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.*” (United Nations, 2015). It reflects the recognition that

education is a fundamental driver of sustainable development, enabling social, economic, and environmental progress. The goal seeks to guarantee that all children, youth, and adults—irrespective of gender, socioeconomic status, or geographical location—have access to quality education at all levels. Its focus extends beyond primary and secondary schooling to include early childhood care, technical and vocational training, higher education, adult literacy, and lifelong learning opportunities. It also emphasizes the elimination of disparities, promotion of equity, and improvement of educational infrastructure to support effective learning environments.

### **Key Targets of SDG 4**

- **4.1** Ensure that by 2030, all girls and boys complete free, equitable, and quality primary and secondary education leading to relevant and effective learning outcomes (United Nations, 2015).
- **4.2** By 2030, Ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are prepared for primary education (United Nations, 2015).
- **4.3** By 2030, ensure equal access for all women and men to affordable and quality technical, vocational, and tertiary education, including university (United Nations, 2015).
- **4.4** By 2030, substantially increase the number of youth and adults who possess relevant skills—including technical and vocational skills—for employment, decent work, and entrepreneurship (United Nations, 2015)
- **4.5** By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for vulnerable groups, including persons with disabilities, indigenous peoples, and children in vulnerable situations (United Nations, 2015).
- **4.6** By 2030, Ensure that all the youth and a major proportion of adults, both men and women, achieve literacy and numeracy (United Nations, 2015)
- **4.7** By 2030, Make sure that all learners receive the knowledge and skills needed to promote sustainable development, including, among others, education for sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship, and appreciation of cultural diversity and its contribution to sustainable development (United Nations, 2015).
- **4.a** Build and improve education facilities that are child-, disability-, and gender-sensitive, and provide safe, secure, inclusive, and more effective learning environments for all (United Nations, 2015).
- **4.b** By 2020, substantially increase globally the number of scholarships available to developing countries—especially least developed countries (LDCs), small island developing states (SIDS), and African countries—for enrolment in higher education, including vocational training and programs in information and communications technology, technical, engineering, and scientific fields, in both developed and other developing countries (United Nations, 2015).
- **4.c** By 2030, substantially enhance the supply of qualified teachers, with the aid of international collaboration and making provision for teacher training in developing countries, particularly in LDCs and SIDS (United Nations, 2015).

### **6.2. India's Progress: Achievements Based on Key Indicators**

To measure India's progress in SDG- 4, the current study selected few indicators and analyse progress from 2015 to 2024.

**1. Gross Enrolment Ratio (GER):** Since 2015, India's Gross enrolment ratio (GER) at the primary level (Grades 1–5) has remained consistently near 100%, reflecting near-universal access to elementary education. Enrolment at the upper primary level (Grades 6–8) has shown steady improvement, rising from around 92% in 2015 to about 97% by 2023, indicating better retention and transition from lower grades. At the secondary level (Grades 9–10), progress has been slower but positive, with GER increasing from approximately 78% in 2015 to around 82% in 2023, highlighting continued efforts to expand participation at higher stages of schooling. Despite these gains, bridging the remaining gaps at the secondary level and improving learning quality remain critical for meeting SDG 4.1 targets.

**2. Learning Outcomes (Indicator 4.1.1):** Between 2016 and 2024, India's foundational learning indicators improved but remain below desired proficiency levels. For Grade 3, the proportion of students able to read a Grade 2-level text increased from 7% to 28%, and those able to perform basic subtraction rose from 8% to 32%. At Grade 5, reading proficiency improved from 24% to 51%, while division skills increased from 10% to 32%. Despite these gains, a substantial share of students continues to fall short of minimum benchmarks, underscoring the need for sustained and targeted interventions. Similar trends are evident at the secondary level, where universal school access has not yet translated into universal acquisition of core competencies—an essential prerequisite for achieving SDG 4.1.

**3. Completion Rates (Indicator 4.1.2):** India's completion rates (Indicator 4.1.2) show strong performance at the **primary level**, where rates have consistently remained above **90%**, supported by very low dropout levels (~1–1.5%) and a retention rate of around **95%**, indicating near-universal completion. At the **upper primary stage**, completion has improved gradually, with moderate dropout rates declining over the years as retention strengthened. In contrast, the **secondary level** continues to face challenges: completion rates increased only modestly from about **55% in 2015 to roughly 60–62% by 2023**, and dropout rates remain higher (~12–16%), though retention improved to approximately **64.7% in 2021–22**. While progress is evident, particularly in early grades, reducing secondary-level dropouts and ensuring smoother transitions remain critical to achieving SDG 4.1 targets.

**4. Gender Parity:** The Gender Parity Index (GPI) data revealed that India already surpassed 1.00 post 2020, suggesting better female enrolment at the **primary level** (GPI  $\approx$  1.03 in both 2021–22 and 2023–24), indicating slightly higher enrolment for girls than boys. At the **secondary level** (Grades 9–10), the GPI was **1.0** in 2021–22, reflecting balanced enrolment between genders. By **higher secondary (Grades 11–12)** in 2023–24, the GPI increased to **1.07**, suggesting that female enrolment outpaced male enrolment at this stage. Rural versus urban GPI for GER is not directly reported; literacy rate gaps are often used as a proxy to infer such trends.

**5. School infrastructure:** Between 2015 and 2023, India has made significant progress in school infrastructure, a core focus of SDG 4. Basic amenities have reached near-universal coverage, with electricity access increasing from 70.2% to 92.8% and drinking water availability from 88.3% to 95.6%. Functional toilets, including separate facilities for girls, expanded from 60% to 84.5% and exceeded 98% by 2023–24, while handwashing facilities improved from 55% to 80.1%. These advancements, supported by initiatives such as the Samagra Shiksha Abhiyan, have enhanced the physical learning environment. However, digital infrastructure remains a critical gap: the proportion of schools equipped with computers rose from 47.5% to 57.2% between 2021–22 and 2023–24, and those with internet connectivity increased from 33.9% to 53.9%.



Despite this progress, substantial disparities persist across rural and urban areas and between government and private schools, highlighting the need for focused policies to strengthen ICT infrastructure and bridge the digital divide in order to fully meet SDG 4's quality and equity goals.

**6. Teacher availability:** In India, the availability of trained teachers—a key requirement under SDG 4 (Indicator 4.c.1)—has improved but varies across educational levels. At the primary level, approximately 85–87% of teachers were formally trained by 2023, while the upper primary level recorded around 80–82%. At the secondary stage, the proportion is lower, averaging 75–78%, and at the higher secondary level, trained teacher availability falls further to about 70–72%. Although these figures reflect progress compared to 2015, achieving universal teacher training (100%) by 2030 remains a challenge, particularly at secondary and higher secondary levels.

**7. Pupil-Teacher Ratio (PTR):** Since 2015, India's Pupil-Teacher Ratio (PTR) has steadily improved across all levels of school education, reflecting progress toward SDG 4 quality targets. At the **primary level**, PTR declined from about **28:1 in 2018–19 to nearly 26:1 by 2021–22**, while at the **upper primary level** it improved from around **19:1 to 19.4:1** in the same period. The **secondary level** achieved an even better ratio, reaching approximately **17:1**, and the **higher secondary level** stands at about **27:1**. These figures are well below the SDG benchmark of **30:1**, suggesting better teacher availability and the potential for more focused student engagement. However, state-level disparities and uneven rural–urban teacher distribution remain critical areas requiring policy attention.

To sum up, India's overall SDG performance has improved in recent years, with its composite score rising from 66 in 2020–21 to 71 in 2023–24, according to the **NITI Aayog SDG India Index 2023–24**. Among all goals, **SDG 4 (Quality Education)** has shown particularly rapid progress, with its score increasing from 63 in 2018 to 89, making it one of the fastest-improving areas. This advancement reflects notable gains in school enrolment, availability of necessary key infrastructure such as electricity, drinking water, and functional toilets, as well as increased accessibility to educational facilities. States like Kerala and Delhi have emerged as top performers, demonstrating stronger achievements in meeting the benchmarks for quality education.

Despite these positive trends, the **UNESCO Global Education Monitoring (GEM) Report** highlights a persistent and critical gap: while access to education has expanded significantly, learning outcomes have not kept pace. A substantial proportion of students, particularly at the primary and upper-primary levels, still lack foundational literacy and numeracy skills. This indicates that although policy initiatives and investments have effectively increased coverage and infrastructure, ensuring that children acquire essential competencies remains a major challenge. Bridging this gap between access and actual learning will be essential for India to fully achieve the objectives of **SDG 4 by 2030**.

### **6.3. Challenges Key Challenges to Achieving SDG 4 by 2030 (300–400 words)**

India faces several significant challenges in achieving Sustainable Development Goal 4 (SDG 4), which seeks to ensure inclusive and equitable quality education for all. Although notable progress has been made in expanding enrolment and implementing initiatives namely, the Right to Education Act, Samagra Shiksha Abhiyan, and Beti Bachao Beti Padhao, persistent gaps continue to undermine both the quality and accessibility of education. These challenges span disparities in learning outcomes, infrastructural inadequacies, teacher shortages, and socio-economic barriers, all of which collectively impede India's ability to realize the full objectives of SDG 4.

### **1. Socioeconomic Disparities**

Socioeconomic inequalities remain one of the most formidable obstacles to equitable education in India. Children from low-income households, Scheduled Castes (SC), Scheduled Tribes (ST), and rural populations continue to face systemic barriers that hinder their access to quality education. According to Singh (2024), these marginalized groups often attend under-resourced schools, face financial constraints that limit school attendance, and encounter discrimination within educational settings. The **urban–rural divide** exacerbates these disparities significantly. In rural areas, not only are schools often sparsely distributed, but they also lack the basic educational infrastructure such as libraries, laboratories, and digital tools. Upreti and Malhotra (n.d.) highlight that rural students are further disadvantaged by limited access to skilled teachers and academic support services, which restricts their ability to compete with their urban counterparts. These structural inequalities perpetuate cycles of poverty and social exclusion, thereby undermining the inclusiveness and equity principles of SDG 4.

### **2. Infrastructure and Resource Constraints**

Infrastructural and material shortages are widespread in India’s public school system and pose a significant challenge to improving educational quality. As noted by Pandey (2019), many government schools operate in substandard buildings, with overcrowded classrooms, broken furniture, and insufficient access to clean water and functional sanitation facilities—especially for girls. Such conditions not only compromise the safety and hygiene of the learning environment but also contribute to high dropout rates. Furthermore, Singh (2024) emphasizes the chronic shortage of **qualified and adequately trained teachers**, particularly in rural and tribal areas. Many instructors lack formal pedagogical training or subject-matter expertise, which impairs the quality of instruction. Teacher absenteeism and poor student–teacher ratios also persist as problems. The lack of teaching-learning materials, including textbooks and digital resources, further restricts students' ability to learn effectively, particularly in remote and underserved regions. These systemic deficiencies create an environment where education delivery is inconsistent and often ineffective.

### **3. Challenges in Promoting Inclusive Education**

Despite the enactment of policy frameworks such as the *Rights of Persons with Disabilities Act (2016)* and various inclusive education programs under *Samagra Shiksha*, children with disabilities continue to face significant hurdles in accessing equitable and quality education in India. The “Sustainable Development Goal 4” progress report (2022) indicates that most schools are still ill-equipped to accommodate students with diverse physical, cognitive, or sensory needs. There is lack of trained special educators, inaccessible infrastructure (e.g., ramps, assistive technologies), and adapted curricula. Additionally, the mainstream curriculum often fails to address varied learning styles and needs, which alienates not only children with disabilities but also those with learning difficulties or language barriers. Singh (2024) argues that the prevailing approach remains more integrative than truly inclusive—meaning children require individual learning needs are placed in regular classrooms without adequate support or curricular modifications. This highlights the urgent need for a **comprehensive policy overhaul**, enhanced teacher training, and a rethinking of curriculum design to ensure all learners are meaningfully included and supported.

While these issues are substantial, they also present opportunities for reform and innovation. By adopting targeted policies, strengthening institutional capacity, and fostering active community engagement, India can address these systemic gaps and accelerate progress toward the effective realization of SDG 4.

#### **6.4. Policy Interventions**

**Table: Policy Interventions Addressing Key Education Challenges in India (Aligned with SDG 4 Targets)**

| <b>Key Challenges</b>                               | <b>Targeted Policy Interventions</b>  | <b>Relevant SDG 4 Targets</b>  |
|---|---|--|
| <b>1. Socioeconomic Disparities</b>                 | <ul style="list-style-type: none"> <li>- Implement equity-based funding mechanisms for marginalized regions (rural, tribal, and urban slums).</li> <li>- Provide conditional cash transfers, free uniforms, and mid-day meals to socio-economically disadvantaged children.</li> <li>- Introduce bridge and remedial education programs.</li> <li>- Design and implement special initiatives to help children with disabilities and those from disadvantaged backgrounds, ensuring equitable access to quality education (Pandey, 2019; "Sustainable Development Goal 4", 2022).</li> </ul> | <p><b>4.1:</b> Ensure inclusive and quality learning for everyone.</p> <p><b>4.5:</b> Eliminate gender disparities and ensure equal access</p> |
| <b>2. Infrastructure &amp; Resource Constraints</b> | <ul style="list-style-type: none"> <li>- Conduct a national audit and implement a time-bound modernization plan for upgrading school infrastructure, especially in rural and marginalized regions</li> <li>-Promote Public-Private Partnerships (PPPs) to provide ICT tools, smart classrooms, and digital learning platforms</li> <li>- Strengthen teacher recruitment, particularly in underserved areas, through rural incentives</li> <li>- Mandate ongoing professional development through platforms like DIKSHA and NISHTHA</li> </ul>   | <p><b>4.a:</b> Build and enhance education facilities</p> <p><b>4.c:</b> Increase supply of qualified teachers</p>                             |



|  |   |  |
|--|---|--|
|  | <ul style="list-style-type: none"> <li>- Prioritize investments in basic school facilities and learning resources to ensure a conducive and inclusive learning environment</li> <li>- Expand the pool of qualified teachers and enhance pedagogical quality through regular in-service training (Pandey, 2019)</li> </ul>   |  |
| <b>3. Inclusive Education Gaps</b>               | <ul style="list-style-type: none"> <li>- Integrate inclusive education principles into pre-service and in-service teacher training programs</li> <li>- Recruit specialized staff including special educators, counsellors, and social workers to support diverse learner needs</li> <li>- Provide assistive learning materials and inclusive infrastructure through grants under <i>Samagra Shiksha</i></li> <li>- Develop inclusive curricula and pedagogical approaches to accommodate varied learning needs</li> <li>- Promote lifelong learning through flexible and community-based education models to bridge access gaps (Mani, 2022)</li> </ul> | <p><b>4.5:</b> Eliminate disparities for persons with disabilities.</p> <p><b>4.a:</b> Safe and inclusive learning environments.</p> <p><b>4.c:</b> Train teachers in inclusive education practices.</p> |
| <b>4. Community &amp; Stakeholder Engagement</b> | <ul style="list-style-type: none"> <li>- Strengthen School Management Committees (SMCs) through capacity building, funding, and active participation from local communities</li> <li>- Conduct awareness campaigns to promote girl child education and increase parental involvement in school affairs</li> <li>- Establish digital learning hubs and deploy mobile learning vans in remote areas</li> <li>- Leverage digital platforms and AI-based tools to enhance teaching quality and offer personalized learning, especially for out-of-</li> </ul>   | <p><b>4.1:</b> Ensure effective learning for all</p> <p><b>4.5:</b> Promote participation of marginalized communities</p> <p><b>4.a:</b> Enhance local involvement</p>                                   |

|  |   |  |
|--|---|--|
|  | school children and dropouts (Mani, 2022) |  |
|--|---|--|

Source: Author's Interpretation

## 7. Conclusion

India's journey toward achieving Sustainable Development Goal 4 has been marked by significant progress in expanding school access, improving infrastructure, and implementing landmark policy frameworks namely the National Education Policy 2020 and the Right to Education Act, etc. However, persistent challenges—particularly in learning outcomes, inclusivity, and equity—underscore the need for a comprehensive policy shift from access to quality. While targeted interventions and flagship programs have laid a strong foundation, bridging systemic gaps such as socioeconomic disparities, regional imbalances, and institutional inefficiencies remains imperative. Achieving SDG 4 by 2030 will require a sustained focus on educational quality, skill development, teacher capacity building, and robust monitoring frameworks, along with stronger stakeholder collaboration. Only by aligning quantitative expansion with qualitative transformation can India ensure that no learner is left behind in its pursuit of inclusive, equitable, and effective education for all.

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