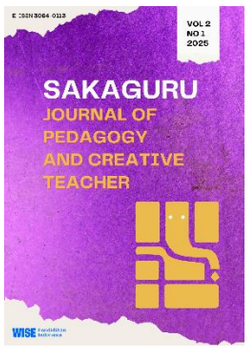

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Revisiting the Sustainable Development Goal 4 “Quality Education”: Insights, Prospect, and Recommendations

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Research Article

Revisiting the Sustainable Development Goal 4"Quality Education": Insights, Prospects, and Recommendations

William Ben Gunawan*

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Abstract

This paper explores the global challenges and prospects associated with the implementation of the United Nations Sustainable Development Goals (SDGs), with a focused analysis on Goal 4: Quality Education. Drawing on current data, scholarly research, and policy reports, the study identifies disparities in educational access and quality across regions, emphasizing how socio-economic, geographical, political, and digital divides impede equitable learning opportunities. A comparative analysis of four countries—Nigeria, India, Finland, and Japan—illustrates how varying governance structures, economic capacities, and cultural dynamics shape education outcomes. The study further examines the impact of global phenomena such as the COVID-19 pandemic, geopolitical tensions, energy transitions, and economic downturns on educational systems. Through this multi-scalar analysis, the paper identifies structural barriers and systemic weaknesses that hinder progress toward SDG 4, particularly in low-income and conflict-affected regions. The paper concludes by offering actionable recommendations, including intersectoral collaboration, inclusive education policy reforms, investment in digital infrastructure, and capacity building in under-resourced areas. The findings underscore the need for globally coordinated, locally adapted strategies that center equity and resilience to ensure the realization of inclusive and quality education for all by 2030.

Keywords: Educational Inequality; Global Education Governance; Quality Education; Sustainable Development Goals (SDGs); SDG Implementation

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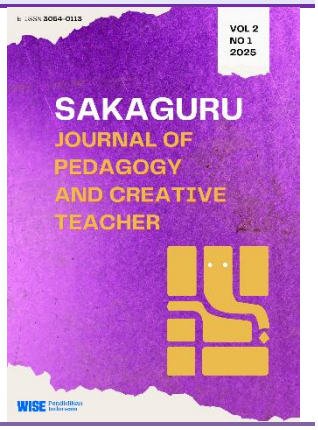

INTRODUCTION

Sustainable Development Goals (SDGs) are a global agenda that was adopted by all United Nations Member States. The idea was to provide a road map to promote peace, prosperity, and growth for people in the present life and for future life. SDGs were born as an improvement of the Millennium Development Goals (MDGs), where members agreed to reduce extreme poverty by the year 2015 [1]. The United Nations Member States came up with 17 SDGs and made an urgent call to all countries, whether developed or developing, for adoption and partnership. They realized that if all the countries globally came together, they could end poverty and other issues affecting us globally and improve health, education, and also inequality and promote economic growth and tackle the issues of climate change. The idea was to ensure all governments, business and civil society work towards ending poverty, creating a better life and creating business opportunities globally. In 2012 during the Rio de Janeiro, Brazil, more than 178 countries agreed on the agenda 21 which was a roadmap to build partnerships to improve and protect human lives and the environment. The United Nation Conference in Rio de Janeiro came with a document "The Future We Want" and agreed to develop a set of SDGs to build upon the MDGs and the following SDGs were developed [2].

The main objective of SDGs is to enhance the MDGs which were formulated and adopted to reduce extreme poverty by more than half by 2015. MDGs were to improve gender parity in primary schools across the globe, reduce the rate on to which children were dying before their fifth birthday by more than half, reduce maternal mortality, health and improve drinking water sources by 2015 [3]. So why SDGs were developed? It was noted that even after having the MDGs in place, more than 800 million people were still living in extreme poverty and were suffering from hunger. More than 144 million people were displaced from their homes. It was observed that 40% water scarcity across the globe was projected. Also over 946 million still were on open defecation and gender inequality was on rise in spite of more women representation in schools [4].

So the next question is, why do SDGs matter? The SDGs represent a universal call to action to address pressing global challenges and build a more equitable, inclusive, and sustainable future. Covering a wide range of interconnected issues—from ending poverty and hunger to promoting health, education, gender equality, clean energy, and environmental protection—the 17 goals form a comprehensive blueprint for sustainable development. These goals emphasize the importance of collective action by governments, businesses, civil society, and individuals in achieving lasting progress by 2030. Each goal is not only ambitious but also deeply interlinked, recognizing that social well-being, economic growth, and environmental stewardship must go hand in hand to ensure long-term prosperity and peace for all [5].

The SDGs matter because they offer a practical and visionary framework for driving creativity, innovation, and cooperation across all sectors. For governments and businesses, the SDGs help identify new opportunities, create meaningful partnerships, and foster trust among stakeholders and policymakers. By aligning strategies with these global goals, organizations can enhance their sustainability efforts, build resilient communities, and support stable markets. Ultimately, the SDGs provide a shared agenda that unites diverse actors in addressing global challenges while opening pathways for inclusive economic development and long-term societal stability and equity.

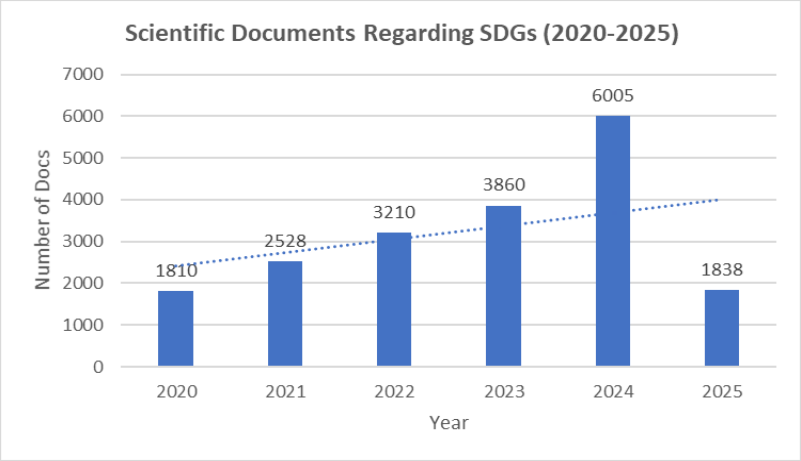

Figure 1. Publication Trends on Sustainable Development Goals (Source: Author, 2025)

On the side of academic trend, the research landscape on SDGs has witnessed significant growth over the past few years, reflecting increasing academic and scientific interest in sustainability-related issues. Figure 1 illustrates the trend in the number of scientific documents related to SDGs from 2020 to 2025 using the Scopus database. The data shows a steady increase, with publications rising annually from 2020 to 2024. The most substantial growth occurred in 2024, where publications surged to 6,005 documents, demonstrating a peak in academic engagement. However, in 2025, there is a sharp decline, which may indicate incomplete data collection. Despite this fluctuation, the overall trend suggests that SDG-related research continues to expand, reinforcing the role of academia in shaping policies and innovations for sustainable development.

Over the past decade, a growing body of research has examined the implementation, monitoring, and outcomes of the SDGs across global, regional, and national levels. Several studies have emphasized the interconnectedness of SDGs and the critical role of integrated policy frameworks in achieving them [6], [7]. In the context of SDG 4 (Quality Education), scholars have also explored key themes such as access to education, teacher training, digital learning disparities, and inclusive policies, particularly in low- and middle-income countries [8], [9]. Despite the expanding academic interest, existing research often lacks comprehensive cross-regional comparisons and in-depth analyses of the systemic barriers that hinder SDG 4 progress in different sociopolitical and geographical contexts. Furthermore, much of the literature either focuses on national case studies or offers broad theoretical discussions without providing data-driven insights that could inform localized implementation strategies [10], [11]. There is a clear research gap in synthesizing trends, challenges, and comparative performance of various regions in advancing educational equity. Limited attention has also been given to evidence-based policy decisions in the education sector—an area crucial for ensuring accountability and targeted interventions.

To address these gaps, this study offers a dual-pronged approach combining bibliometric analysis and literature synthesis. It not only maps out the academic landscape on SDG 4 but also investigates the barriers and facilitators affecting progress in diverse regions. Through this approach, the paper contributes to a more nuanced understanding of how data-informed strategies can support inclusive and equitable education in alignment with global sustainable development goals.

In light of the global urgency and shared responsibility outlined above, this paper aims to explore the SDGs in greater depth, with a particular focus on their prospects, challenges, and regional disparities in implementation. Specifically, the paper will delve into the performance and barriers associated with SDG 4: Quality Education, examining how geographical, social, and policy-related factors influence the achievement of equitable and inclusive education worldwide. By analyzing trends, identifying best and least performing regions, and comparing approaches across various contexts, this study seeks to provide actionable recommendations and insights for enhancing educational outcomes in alignment with the 2030 Agenda for Sustainable Development.

THEORETICAL OVERVIEW

Sustainable Development Goals: Prospects and Challenges

The SDGs provide a clear and actionable roadmap for addressing global challenges such as poverty, inequality, climate change, and economic growth. With increasing global awareness and commitment from governments, businesses, and civil society, significant progress has been made in multiple areas, particularly in education, health, and clean energy. Technological advancements, especially in digital transformation, renewable energy, and sustainable agriculture, are playing a crucial role in accelerating progress toward these goals [12], [13]. Countries that integrate sustainability into their national policies and development plans are more likely to achieve long-term success, setting examples for others to follow.

International collaboration and financial support from institutions and foreign direct investments, grants, and low-interest loans, enabling them to invest in critical sectors such as infrastructure, healthcare, and education [14], [15], [16]. Additionally, the rise of green finance, including sustainable bonds and impact investing, is directing financial resources toward environmentally and socially responsible projects [17], [18]. These funding mechanisms are vital for bridging the resource gap and ensuring that no country is left behind in the pursuit of the SDGs.

Another promising aspect is the growing involvement of the private sector in sustainable development. Companies are increasingly adopting environmental, social, and governance principles, integrating sustainability into their business models [19]. On the other hand, corporate Social Responsibility (CSR) initiatives play a crucial role in promoting SDGs implementation by reducing their carbon footprint, adopting energy-efficient processes, minimizing waste, and investing in renewable energy [20]. Corporations also engage in responsible sourcing, ensuring ethical labor practices and fair wages across their operations. By integrating CSR into their core business strategies, companies not only enhance their brand reputation and consumer trust but also drive systemic change toward more sustainable production and consumption patterns, fostering long-term economic, social, and environmental benefits. Furthermore, public-private partnerships are fostering innovation and efficiency in implementing sustainable projects [21], leading to more effective solutions in sectors such as clean energy, water management, and waste reduction.

Despite the promising prospects, several challenges hinder the full realization of the SDGs. One of the primary obstacles is the persistent financing gap, particularly in developing nations. Many countries lack the necessary financial resources to implement large-scale sustainable projects due to high debt burdens, limited access to capital markets, and economic

instability. The COVID-19 pandemic further strained global economies, diverting funds toward crisis management and slowing progress on critical SDG targets [24]. Without substantial increases in international aid, private investment, and domestic revenue mobilization, achieving the SDGs by 2030 remains uncertain.

Another significant challenge is the impact of climate change, which threatens progress across multiple SDG goals. Rising global temperatures, extreme weather events, and environmental degradation are disproportionately affecting vulnerable communities, leading to food insecurity, displacement, and economic losses [25], [26]. Many developing countries are struggling to adapt to climate-related risks due to inadequate infrastructure and financial constraints [27]. Without stronger climate mitigation and adaptation efforts, climate change could reverse decades of progress in poverty reduction, health, and economic development.

Moreover, geopolitical conflicts and political instability pose serious risks to SDG implementation. Wars, civil unrest, and governance challenges disrupt development efforts by diverting resources away from social and environmental programs. Conflict-affected regions often experience weakened institutions, human rights violations, and economic downturns, making it difficult to establish sustainable policies [28]. Additionally, global power struggles and trade disputes can hinder international cooperation, slowing down progress on key SDG targets such as poverty eradication, gender equality, and global partnerships.

Lastly, data availability and monitoring remain critical challenges in tracking SDG progress. Many low-income countries lack robust data collection and reporting systems, leading to gaps in measurement and accountability [29]. Without accurate and timely data, it is difficult to assess progress, identify priority areas, and implement evidence-based policies. Strengthening data infrastructure, investing in digital tools, and enhancing transparency are essential for ensuring that progress toward the SDGs can be effectively monitored and adjusted to address emerging challenges.

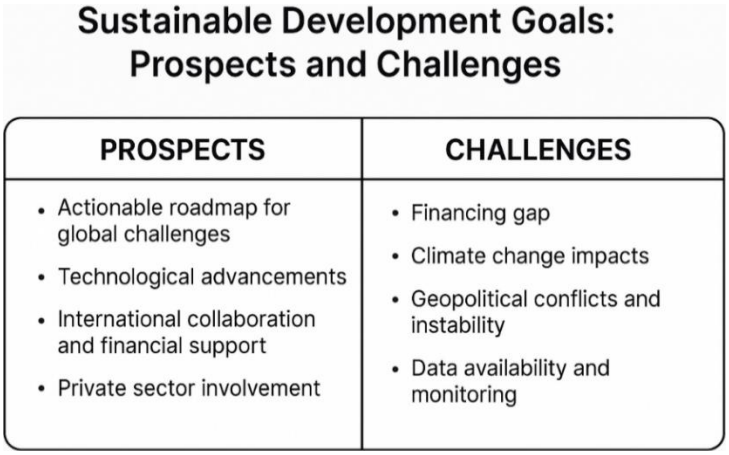

Figure 2. Summary of Sustainable Development Goals Prospects and Challenges (Source: Author, 2025)

Recent Performances on Sustainable Development Goals Implementations

To recap, the SDGs serve as a global blueprint for achieving a more equitable, sustainable, and prosperous world by 2030. However, progress toward these goals varies significantly among countries, with some demonstrating exceptional commitment and achievement, while others struggle due to economic, political, and infrastructural challenges [30], [31]. Identifying the best and least-performing nations may provide valuable insights regarding the current status quo.

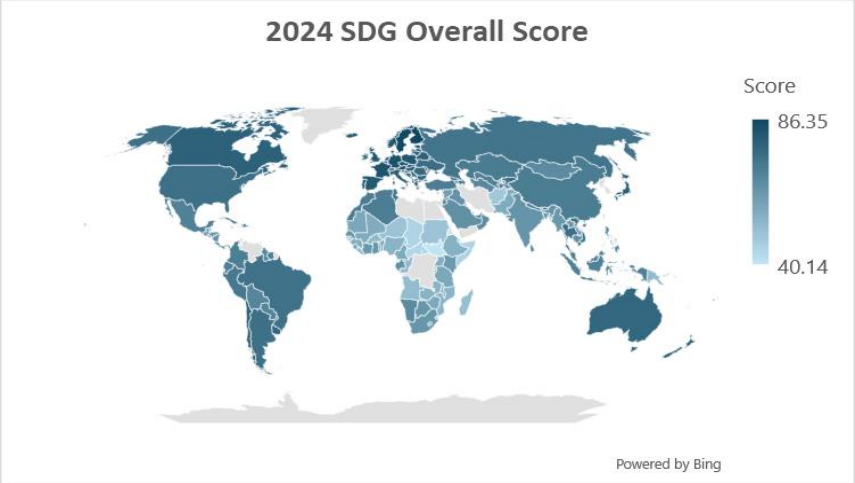

Figure 3. The Overall Score of Sustainable Development Goal Performance of United Nations Member States (Source: Sustainable Development Report 2024)

Figure 3 highlights Finland as the top-performing country, achieving an impressive score of 86.35, followed closely by Sweden (85.70) and Denmark (85.00) (see Appendix 2 for the scores). These Nordic countries have consistently led global sustainability efforts due to their strong environmental policies, high social welfare standards, and well-structured governance. Their success is largely attributed to ambitious climate action, renewable energy initiatives, and inclusive social policies that address inequality and promote well-being [32]. Additionally, other European nations, such as Germany (83.45) and France (82.76), have also demonstrated strong progress toward the SDGs, emphasizing economic stability, technological innovation, and comprehensive public health systems. These high-scoring nations serve as benchmarks for sustainability, showcasing effective policy frameworks and long-term commitments to achieving the SDGs.

In contrast, the countries at the bottom of the SDG Index face significant socio-economic and political challenges that hinder their progress. South Sudan, with the lowest score of 40.14, struggles with ongoing conflict, political instability, and a lack of basic infrastructure, making it difficult to advance in areas such as education, healthcare, and economic development. Similarly, the Central African Republic (44.21), Chad (45.07), and Somalia (45.42) suffer from extreme poverty, weak governance, and limited access to essential services, which severely impact their ability to implement sustainable development policies. Many of these least-performing nations are burdened by food insecurity, inadequate healthcare systems, and environmental degradation [33], underscoring the urgent need for international cooperation, targeted investments, and policy interventions to accelerate their progress toward the SDGs

METHODS

This research employs a qualitative literature review methodology to explore the multifaceted challenges and global disparities in the implementation of Sustainable Development Goal 4: Quality Education. The literature review approach allows for the synthesis of a wide range of scholarly articles, institutional reports, and statistical data published between 2015 and 2025, with a particular emphasis on peer-reviewed journal articles, reports from international organizations (e.g., United Nations, UNESCO, OECD), and national policy documents.

Through critical analysis and thematic categorization, the study identifies common barriers, regional differences, and emerging opportunities in advancing quality education. This method provides a comprehensive understanding of the socio-economic, political, and cultural dynamics that influence educational access and equity across different contexts.

The review also includes a comparative case analysis of four countries—Nigeria, India, Finland, and Japan—selected to represent diverse geographic regions, economic development levels, and education governance models. These case studies were analyzed using secondary sources that reflect each country's educational policy, performance metrics (e.g., literacy rates, enrollment ratios, PISA scores), and contextual challenges. Thematic patterns were drawn to highlight contrasts and convergences in educational progress and policy implementation. The literature review method, in this context, facilitates an interdisciplinary and globally informed exploration of SDG 4, offering both diagnostic insights and strategic recommendations rooted in existing academic and policy frameworks.

RESULT AND DISCUSSIONS

Challenges and Barriers to Sustainable Development Goal 4: Quality Education

Education plays a crucial role in achieving the SDGs. As it is also one of the goals for SDGs, providing a quality education is not only about the process of teaching and learning to obtain knowledge and skills to find jobs. The specific goal for Quality Education is aiming that by 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and culture's contribution to sustainable development [34].

That is why the concept of teaching and learning must be transformed to enable individuals to lead sustainable development as agents of change. There is one key approach to implementing education for achieving the SDGs, which requires the whole 4 elements to provide a quality education. As illustrated in Figure 4, it is required the integration and cooperation of four critical elements which are government, community, curriculum, and education infrastructure. These elements must work in synergy to create a supportive, inclusive, and adaptive learning environment. The UNESCO Education for Sustainable Development framework emphasizes that education systems should be holistic, learner-centered, and rooted in real-world challenges to foster the knowledge, skills, values, and attitudes needed for a sustainable future [35].

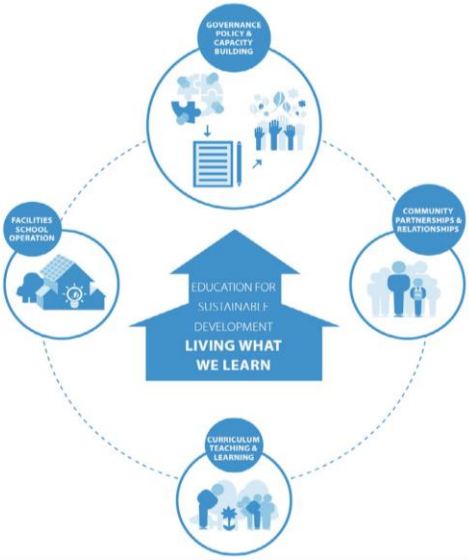

Figure 4. The Whole-Institution Approach (Source: UNESCO, 2015)

Challenges

Achieving SDG 4, which seeks to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, remains a significant global challenge. While there has been notable progress in expanding access to education, deep-seated inequalities persist across multiple dimensions. Children and youth from marginalized backgrounds, particularly those affected by poverty, gender bias, ethnicity, disability, or remote geographic location, often face systemic barriers to accessing quality education [36]. These disparities are especially pronounced in low- and middle-income countries where socioeconomic stratification and historical inequities continue to influence educational outcomes.

Financial constraints further compound these inequalities. In many countries, education systems suffer from inadequate or inequitable budget allocations that fail to prioritize underserved populations. Limited financial resources restrict the expansion of infrastructure, the procurement of learning materials, and the hiring and training of qualified teachers [37]. Geographic disparities amplify these challenges, as governments often struggle to deliver consistent, high-quality educational services to rural, remote, or conflict-affected areas. The lack of trained educators, poor infrastructure, and weak transportation systems create significant obstacles to achieving universal access.

Beyond the logistical and financial difficulties, social and cultural norms continue to undermine educational equity. In several regions, entrenched gender roles and discriminatory cultural practices still inhibit girls and women from attending or completing school [38]. These norms can also marginalize other vulnerable groups, including ethnic minorities and children with disabilities, by discouraging their participation in formal education. Furthermore, conflict and forced displacement due to war, violence, or natural disasters severely disrupt educational continuity. Displaced populations often face limited access to safe learning environments and essential resources, which significantly reduces their long-term educational prospects.

A lack of inclusive education policies and practices exacerbates these challenges. Many national education frameworks do not fully accommodate the diverse needs of learners, particularly those with disabilities or from minority communities [39]. Without inclusive curricula, teacher training, and learning materials, these students are left behind. Inclusive

education requires a commitment to equity in policy design, implementation, and monitoring—yet, this commitment is frequently absent or insufficient.

Barriers

Systemic barriers within the education sector also hinder progress toward SDG 4. Weak governance structures, corruption, and insufficient accountability mechanisms lead to inefficient service delivery and misallocation of resources [40]. Even when national policies are well-designed, gaps in implementation are common due to limited administrative capacity, lack of inter-agency coordination, or a deficiency in political will. Teacher shortages and unequal teacher distribution, particularly in disadvantaged areas, continue to negatively impact both access and learning outcomes, widening the equity gap [41].

Lastly, the absence of a holistic, multi-sectoral approach to education significantly limits progress. Education cannot be viewed in isolation; its success depends on the integration of complementary services such as healthcare, nutrition, social protection, and child welfare [42]. When these sectors operate in silos, efforts to improve learning outcomes are undermined. Moreover, global crises such as the COVID-19 pandemic and economic downturns have affected vulnerable populations and reversed many of the gains previously achieved in education access and equity. To overcome these multifaceted obstacles, it is essential to strengthen international cooperation, increase targeted investments, improve data systems for monitoring, and embed inclusivity and resilience into education policy and planning.

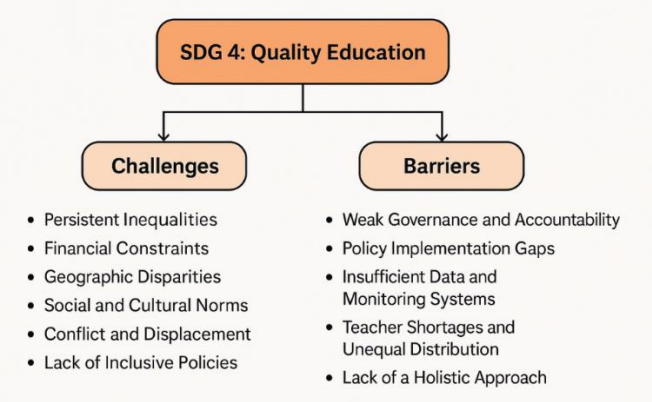

Figure 5. Summary of Sustainable Development Goal 4 Challenges and Barriers (Source: Author, 2025)

Geographical and Global Considerations on the Challenge in Achieving Sustainable Development Goal 4: Quality Education

When we are talking about SDG 4 challenges, it is important to see global factors in the world, such as social and political issues, economy, and energy security, as well, because it is critically needed by people. All series of human behaviours in recent history emerged in the world and have recently piled up the challenges. Some issues that have to be considered are:

a. COVID-19

The COVID-19 pandemic has been influencing the world starting in China, and has been spreading to all the world. Because of this pandemic, the world economy has also been affected. However, some of the sectors, such as the digital market related to online marketing, had the opportunity to rise since real physical meetings were not allowed for many months. It was creating some other opportunities as well in IT or the digital industry, while some other sectors were still on hold to wait and see, and some sectors were on slow progress, and many companies were closed down. They couldn't

maintain the revenue because nobody bought their products during the lockdown. Most of them were industries that need physical presence, such as industrial labourers, utilities, manufacturing, constructions, etc. Many people live in poverty and COVID-19 pandemic has triggered slow economic growth [43].

Moreover, the economic downturn caused by the COVID-19 pandemic significantly affected people's ability to access and afford good-quality education, particularly in lower-income and developing regions. As families faced unemployment and financial instability, education was deprioritized, leading to increased dropout rates and reduced learning outcomes [44]. However, the pandemic also accelerated the development and adoption of digital classrooms and online learning platforms. This shift offered a new form of educational access that could reach remote areas and under-resourced communities, providing an alternative means of learning despite physical school closures. Although the digital divide remains a challenge—especially in areas with limited internet access or technological infrastructure—the rapid integration of technology into education brought hope for a more inclusive, flexible, and resilient educational future [45].

b. War between Israel and Palestine and Trade War between US and China

Another world issue between Israel and Palestine was creating high tension amongst many countries and the alliances of both countries. It caused the oil price to escalate, some oil production in Israel and several other countries was shut down due to the rising instability, leading to limited supplies from those regions. This situation disrupted the global supply chain at a time when demand from many countries continued to increase. As a result, fuel and transportation costs soared, which in turn drove up food prices and living expenses. The impacts were most heavily felt by middle- and lower-income communities, particularly in countries that rely heavily on oil imports and are vulnerable to inflationary pressures caused by global conflicts.

In parallel, the trade war between the United States and China, which escalated from the Trump administration and continued through the Biden era, added another layer of strain on the global economy. Initiated primarily through the imposition of tariffs on Chinese goods, this trade war resulted in retaliatory tariffs by China, affecting multiple sectors, including technology, agriculture, and energy. One of the most significant points of tension involved the control and export of rare earth minerals—critical components for manufacturing renewable energy technologies and electronics. The US government responded with stricter regulations on fossil fuel supply and increased investment in renewable energy through policies such as the Inflation Reduction Act. However, the redirection of resources, increasing tax burdens, and higher production costs triggered economic instability, rising national debt, and frequent blackouts due to underdeveloped renewable infrastructure. These effects not only disrupted economic systems but also limited international collaboration and support—especially for nations dependent on foreign trade, investments, and aid from both global powers.

The compounded impacts of global conflict and economic rivalry pose serious challenges to achieving SDG 4 on Quality Education. Inflation, energy shortages, and economic recessions often lead to education budget cuts, both at the household and governmental levels. Families struggling with basic needs deprioritize education, and

governments may redirect funding away from education to stabilize other sectors. Trade wars also disrupt access to educational technologies, such as laptops or digital infrastructure components, which are often produced or sourced internationally. While digital learning showed promise during the pandemic, unequal access to technology and economic instability continues to exacerbate educational inequalities between and within countries [46]. Furthermore, children in conflict zones or economically unstable regions are more likely to face school dropouts, limited access to learning materials, and lower educational attainment, making the global vision of inclusive and equitable quality education increasingly difficult to achieve.

c. Digital Rise

Since the rise of digital technology in COVID-19 pandemic, mostly comes from Gen Z or younger ages, it's been growing rapidly, adding the new economic contribution, however the poverty is still becoming a big issue, and hasn't lowered down significantly, particularly after COVID-19. There were also issues of cyber-attack by hackers in many countries in 2022 against transportation sectors, fuel supply, and major utilities in US aviation infrastructures and many countries as well including Malaysia and Asia. In Indonesia, there was a cyber-attack penetrating government's data, and it has been investigated that some hackers have apparently wanted to be hired by a government agency. The emerging AI such as Deepseek from China has appeared to attack the US economy, exacerbated by the climate change that has been spoken across many countries.

The rapid growth of digital technology during and after the COVID-19 pandemic has brought significant transformations in various sectors, including education. While digital platforms have created new opportunities for online learning and global access to knowledge, they have also revealed stark inequalities. In regions with poor digital infrastructure or limited internet access, students face significant barriers to participating in virtual classrooms [47]. Moreover, the rise in cyberattacks targeting critical infrastructure—including education systems—has heightened concerns over data security and digital safety, which are essential for maintaining trust in online education platforms. Additionally, poverty remains a persistent barrier to accessing digital tools such as laptops, stable internet, and electricity, further marginalizing low-income communities. Although digital innovation has the potential to support SDG 4 by expanding educational reach, these challenges risk widening the digital divide, thereby limiting the inclusivity and equity that SDG 4 seeks to promote.

d. Renewable Energy

Many countries have developed renewable energy soon after China has launched the green energy or renewable energy industry, that is the fact it created exploration of rare earth minerals to discover in locations that its resources have been produced by only some of countries such as China, India, Indonesia, Germany. Since then, some business in US and some businesses such as Amazon involved in investing green technology and capitals that the fact the new technology is costly especially deals with the rare earth minerals which the locations are only in some areas in Asia. It will take a lot of investment to provide the transportation and the infrastructure. When renewables have been implemented, especially in the EU, climate change policy has been introduced to mitigate the climate crisis. Unfortunately, some policies have been implemented to move

away from fossil fuel according to the Paris Agreement. It is resulting in some policies to decline the oil or gas sector in some countries. It has caused the continuous electricity blackout, heater for homes and the electrical appliances can't be sufficient to empower the electricity during winter season in many locations even though the initial payment of the solar panel and storage have been installed.

The transition to renewable energy as a response to climate change, while vital for environmental sustainability, also presents economic and infrastructural challenges that may indirectly affect progress toward SDG 4. The high cost of implementing green technologies—especially in regions lacking rare earth mineral resources—can lead governments to divert funding from sectors like education to energy infrastructure and environmental initiatives. In areas where electricity remains unstable due to the phase-out of fossil fuels, students may experience disruptions in accessing digital learning tools, particularly during crucial seasons such as winter [48]. Furthermore, communities already vulnerable to climate-induced poverty may struggle even more as job losses occur in traditional energy sectors, affecting household income and thereby limiting children's access to consistent and quality education. While the climate agenda is essential for a sustainable future, equitable energy transitions must be carefully managed to avoid exacerbating existing inequalities, including those related to educational access and resources.

e. Economic Focus

Economic stability plays a crucial role in achieving SDG 4, as financial capacity directly influences a country's ability to provide equitable, inclusive, and high-quality education for all. The lingering effects of the COVID-19 pandemic, combined with global energy transitions and inflation, have placed immense pressure on national budgets—especially in developing countries. When governments face economic downturns, budget allocations for education are often among the first to be reduced. This compromises school infrastructure, teacher salaries, access to digital learning tools, and scholarship programs—ultimately widening the education gap between socio-economic groups [49].

In times of economic hardship, the focus of many countries shifts from long-term sustainability goals to immediate survival and economic recovery. Households affected by poverty may withdraw children from school to contribute to family income, especially in regions where education is not free or comes with associated costs like transportation, uniforms, or digital access. Inflation and unemployment limit both public and private investment in education, stalling progress toward SDG 4. Economic insecurity also weakens support for international education aid, as donor countries redirect funds to domestic priorities, further affecting global education equity.

Therefore, discussions around sustainability must prioritize economic resilience to ensure that education remains accessible and high-quality regardless of external shocks. Energy security, trade stability, and job creation are interlinked with educational outcomes. Without a solid economic foundation, efforts to improve education become increasingly difficult. It is vital that governments, industries, and global institutions collaborate to protect education funding, even during economic crises, as the long-term development of any nation depends heavily on the education of its people.

Achieving SDG 4, which aims to ensure inclusive and equitable quality education for all, is significantly influenced by geographical disparities. Across the globe, children's access to education is often determined by where they are born and raised. Developed and developing countries, as well as urban and rural communities, display striking differences in educational opportunities and outcomes. These geographical divisions are deeply tied to broader issues such as poverty, infrastructure, political stability, and digital inclusion.

To meet SDG 4 by 2030, policymakers and global stakeholders must prioritize geographical inclusivity in education strategies. Investments in rural infrastructure, digital connectivity, teacher recruitment, and culturally relevant curricula are essential. Moreover, national education plans must be guided by localized data and participatory planning to ensure that interventions address the unique challenges faced by learners in different contexts. Only by tackling geographical disparities head-on can the global community ensure that no child is left behind in the pursuit of quality education for all.

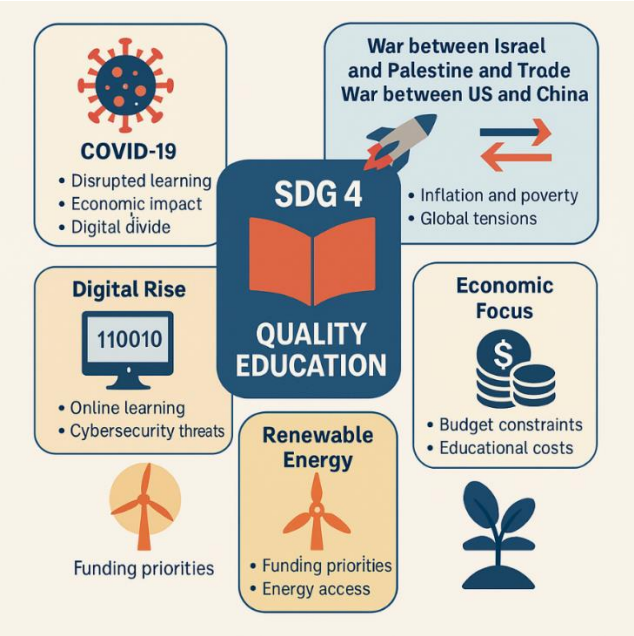

Figure 6. Global and Geographical Considerations for a Successful Quality Education
Source: Author (2025)

Achieving Sustainable Development Goal 4: A Comparative & Regional Analysis of Quality Education Across Diverse Contexts

SDG 4 seeks to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. The goal encompasses access, equity, quality, and learning outcomes as essential components of development. However, achieving this goal remains elusive in many regions due to diverse socio-economic, political, and cultural constraints. This section provides a comparative analysis of four countries: Nigeria, India, Finland, and Japan, representing varying levels of development across Africa, South Asia, Europe, and Asia-Pacific. By analyzing challenges, policies, and structural contexts, this paper identifies lessons and strategic approaches to accelerate progress toward SDG 4.

a. Nigeria: Structural Constraints in an Unstable Policy Environment

Nigeria presents a multifaceted and deeply challenging context for achieving SDG 4. As Africa's most populous country, with over 200 million inhabitants, the education system faces significant strain in both access and quality. Over 10.5 million Nigerian children are out of school, exacerbated by poverty, insecurity, and gender discrimination [50]. The Universal Basic Education (UBE) programme launched in 1999 and formalized by the UBE Act of 2004 seeks to provide free and compulsory basic education for children aged 6–15. However, implementation is marred by insufficient funding, corruption, and weak coordination among federal, state, and local authorities [51]. States are required to provide matching grants to access federal education funds, yet many lack the fiscal capacity or political will to comply, delaying the release of critical resources.

One of the major impediments is the prevailing insecurity in the northeast and northwest regions, where insurgent groups such as Boko Haram have explicitly targeted education infrastructure. Attacks on schools, abduction of students, and the displacement of entire communities have severely disrupted learning [52]. Gender disparities remain acute, particularly in rural areas. Socio-cultural norms often prioritize domestic responsibilities and early marriage over education for girls. It was highlighted that girls often have incomplete primary education. In contrast, boys often leave school to support family income through labor, highlighting poverty as a cross-cutting constraint [53]. Moreover, the quality of education remains low. Many classrooms are overcrowded, and teaching is undermined by poorly trained staff and irregular teacher attendance [54]. Rural-urban disparities are also stark; rural schools frequently lack basic amenities such as electricity, toilets, and learning materials [55].

Despite these challenges, there have been pockets of innovation. Programs such as the Girls' Education Project, implemented by UNICEF and funded by the UK Foreign, Commonwealth & Development Office, have shown positive impacts in increasing female enrollment and retention [56]. Furthermore, civil society organizations have stepped in to provide non-formal education for internally displaced children and out-of-school youth. Addressing Nigeria's education challenges requires sustained investment, robust institutional frameworks, and inclusive policies that prioritize marginalized groups. Leveraging technology, community participation, and inter-sectoral collaboration can also help in closing the gaps in education equity and access.

b. India: A Complex Federal Education Landscape in Transition

India, home to over 1.4 billion people, operates one of the largest and most complex education systems globally. The country's commitment to universal education is enshrined in Article 21A of the Indian Constitution and operationalized through the Right to Education (RTE) Act, 2009. The RTE mandates free and compulsory education for children aged 6–14, and its implementation has led to near-universal primary enrollment. However, enrollment figures mask substantial disparities in learning outcomes and quality.

India's federal structure results in considerable heterogeneity in education governance and delivery. States like Kerala and Tamil Nadu report high literacy and better education indicators, while others such as Bihar, Uttar Pradesh, and Jharkhand struggle with chronic underinvestment and governance bottlenecks [57]. Socio-economic and identity-based exclusions persist. The gender gap, although narrowing,

continues to affect adolescent girls, particularly in conservative and economically backward regions. A significant number drop out due to early marriage, household responsibilities, and inadequate sanitation facilities in schools [58].

India's education system is also deeply stratified, with a parallel growth of low-cost private schools, particularly in urban and peri-urban areas. These schools often operate without regulatory oversight and employ untrained teachers, yet parents prefer them due to perceived better discipline and English-medium instruction. However, research suggests that these schools often deliver marginally better learning outcomes than public schools, raising concerns about privatization and inequality [59]. The COVID-19 pandemic exacerbated these inequalities. The National Sample Survey in 2021 noted that over 60% of rural households lacked access to internet and digital devices, severely curtailing access to online learning. Government initiatives like DIKSHA and PM eVidya provided content, but usage was uneven across states and socio-economic strata [60].

The National Education Policy (NEP) 2020 represents a transformative vision for the sector. It emphasizes holistic, multidisciplinary learning, foundational literacy, vocational education, and teacher training [61]. Yet, translating policy into practice remains a daunting task. With limited fiscal resources and vast inter-state capacity differentials, success will depend on political will, institutional capacity, and public accountability. India’s journey toward SDG 4 requires not only expanding access but also ensuring meaningful learning, inclusive curricula, and robust assessment systems that prioritize equity, flexibility, and digital inclusion.

c. Finland: A Model of Trust, Equity, and Educational Coherence

Finland is frequently cited as a paragon of educational excellence and equity, consistently ranking among the top-performing nations in the OECD’s Programme for International Student Assessment (PISA). The Finnish education model is characterized by its student-centric approach, high levels of teacher autonomy, a strong emphasis on formative assessment, and universal access to high-quality public education [62]. One of the most distinguishing features of Finland’s system is the status and training of teachers. All teachers are required to hold a master’s degree, and teacher education programs are highly selective, emphasizing both subject expertise and pedagogical research. The trust-based culture allows teachers considerable autonomy in curricular and instructional decisions, supported by school-level innovation and collaboration [63].

Finland’s commitment to equity manifests in comprehensive support systems, including early intervention, individualized student services, and a lack of high-stakes testing until the end of secondary education. This inclusive approach has led to minimal performance variation between schools, with rural and urban areas showing comparable results—a rare achievement globally [64]. Despite its achievements, Finland faces emerging challenges. Declining PISA scores since 2012 and concerns about student motivation and mental health have prompted national reflection. The COVID-19 pandemic also exposed digital readiness gaps, particularly in socioeconomically disadvantaged households. Nevertheless, strong institutional coordination and robust digital infrastructure allowed a relatively smooth transition to remote learning compared to many other countries.

The Finnish model demonstrates the transformative potential of policy coherence, equitable resource allocation, and professionalized teaching. Its experience offers key lessons for nations seeking sustainable, inclusive education reform: prioritize equity alongside excellence, empower educators, and cultivate trust in public institutions.

d. Japan: High Achievement with Emerging Equity Concerns

Japan's education system is known for its rigor, efficiency, and high academic achievement. With near-universal enrollment and a robust public education infrastructure, Japan has long been regarded as a leader in primary and secondary education in Asia. Its students regularly score above the OECD average in science, reading, and mathematics [64]. The system is marked by centralized curriculum development, uniform school standards, and a culture of discipline and perseverance. Teachers are respected professionals who undergo rigorous training and are supported through mentorship and continuous professional development. The "Lesson Study" approach, which involves collaborative planning and peer observation, has contributed to pedagogical improvements and reflective teaching practices.

However, Japan's system is not without its challenges. One notable concern is the intense academic pressure placed on students, especially in the context of the highly competitive university entrance examinations. This has given rise to a shadow education industry—known as "juku" or cram schools—which further entrenches socio-economic disparities. Wealthier families are more likely to afford private tutoring, thereby exacerbating educational inequality [65]. Japan also grapples with demographic decline and a growing population of immigrant and multicultural students, which places new demands on schools unaccustomed to linguistic and cultural diversity. Inclusive education practices are evolving, but progress remains incremental. Furthermore, while Japan responded swiftly to the COVID-19 crisis by launching the GIGA School Program to provide devices and high-speed internet to all students, digital literacy and pedagogical adaptation continue to vary by region and school [66]. To sustain its educational strengths while addressing equity concerns, Japan must balance traditional academic rigor with well-being, diversity, and inclusive innovation. Policy shifts toward holistic development and greater digital integration signal a move in this direction.

Discussion

The achievement of SDG 4 (Quality Education) remains hindered by a complex web of systemic, financial, social, and geographic challenges. Marginalized populations, particularly those in low- and middle-income countries, continue to face unequal access due to poverty, gender norms, ethnic discrimination, and geographic isolation. These inequalities are exacerbated by underfunded education systems, weak infrastructure, and shortages of trained educators, especially in rural and conflict-affected areas. Moreover, cultural barriers and displacement caused by war and natural disasters disrupt educational continuity. The lack of inclusive policies further alienates learners with disabilities and minority backgrounds, revealing the urgent need for equity-centered educational reform and comprehensive policy implementation.

Global crises and economic instability have added further complexity to these challenges. The COVID-19 pandemic disrupted traditional education, while also exposing and

widening the digital divide. Trade tensions, geopolitical conflict, rising energy costs, and inflation have strained household and government budgets, often deprioritizing education. The global shift toward renewable energy and digitalization, although promising, has not been evenly beneficial, with infrastructure gaps and cybersecurity risks creating new inequalities. Geographical disparities also play a significant role; access and quality of education vary widely between urban and rural regions and across countries with differing economic resilience. Addressing these intersecting issues requires integrated, multisectoral strategies that prioritize inclusive policies, sustained investment, and geographically targeted interventions to ensure equitable access to quality education for all by 2030.

The development of national education systems is heavily influenced by each country's unique socio-political and historical contexts. In Nigeria, the colonial education legacy entrenched regional inequalities, with missionary schools proliferating in the south while the north received limited educational investment. Post-independence, the government sought to expand access through national policies such as the UBE programme, yet systemic corruption, civil unrest, and weak decentralization continue to hamper progress.

India’s education system similarly reflects a colonial and caste-based legacy. British colonial policies created a dual system emphasizing elite education for administrative purposes while neglecting mass literacy. Post-1947, the Indian state made significant constitutional and legal strides, particularly with the Right to Education Act (2009), yet systemic barriers such as caste, patriarchy, and rural underdevelopment persist. Moreover, the policy-to-practice divide remains stark across states due to disparities in governance capacity.

In contrast, Finland’s transformation into a global education leader was deliberate and policy-driven. In the 1970s, Finland overhauled its system with the introduction of a comprehensive school model (Peruskoulu), aimed at equity and inclusiveness. The reform abolished parallel tracks and ensured that all students, regardless of background, received the same curriculum through Grade 9. This structure enabled equitable learning environments and eliminated socioeconomic disparities in achievement [62].

Japan’s education history mirrors its rapid modernization during the Meiji Restoration, when compulsory education was introduced in the late 19th century. Post-WWII reforms under American occupation brought about a democratic and egalitarian education structure. However, academic rigor and cultural emphasis on conformity have persisted, shaping both the strengths and limitations of Japan’s education system today. Japan's focus on moral education, collective responsibility, and standardized quality has produced consistently high outcomes but also concerns over student well-being.

In the global education landscape, international organizations and bilateral donors play a crucial role in supporting developing countries in achieving SDG 4. For Nigeria, agencies like UNICEF and the Global Partnership for Education provide technical assistance, funding, and capacity-building initiatives. UNICEF’s Girls’ Education Project, supported by the UK's Foreign, Commonwealth and Development Office, has significantly improved enrollment rates for girls in northern Nigeria [56]. India, while less aid-dependent, benefits from the World Bank, UNICEF, and UNESCO partnerships that support targeted initiatives such as digital education, inclusive curriculum reform, and foundational literacy programs. The National Initiative for Proficiency in Reading with Understanding and Numeracy, aligned with NEP 2020, draws on technical frameworks from global best practices [67].

Developed countries like Finland and Japan are not recipients of aid but rather serve as donors and knowledge-sharing hubs. Finland contributes through development cooperation programs with Sub-Saharan Africa and Asia, promoting inclusive pedagogy, teacher training, and curriculum innovation [68]. Japan's Official Development Assistance, managed by JICA, supports infrastructure development and capacity building, especially in Asia-Pacific countries. Japan also hosts UNESCO's Asia-Pacific Regional Bureau for Education, facilitating policy dialogue and best practice dissemination [69]. These collaborative platforms not only provide financial resources but also foster cross-country learning, allowing policymakers to adapt global innovations to local contexts. The effectiveness of aid, however, hinges on domestic ownership, transparent governance, and political will in recipient countries.

To advance progress toward SDG 4, tailored and evidence-based policy strategies are essential for each of the country:

a. Nigeria must address foundational deficiencies by prioritizing early-grade literacy, reforming teacher training institutes, and enhancing school governance. Greater fiscal decentralization and real-time monitoring mechanisms are required to curb inefficiencies and promote equitable spending. Collaboration between federal and sub-national governments is vital for localized implementation of national policies.
b. India should focus on implementing NEP 2020 effectively, particularly in underperforming states. Bridging digital divides through affordable technology, enhancing multilingual education, and strengthening community-based school management committees can improve learning equity. India must also address structural exclusion by targeting social protection schemes at out-of-school children and first-generation learners.
c. Japan should mitigate excessive academic pressure by encouraging formative assessment and student well-being. Embracing multicultural inclusion through language support programs and teacher sensitization will help address its evolving demographic profile. The government should also regulate the private tutoring industry to ensure that educational inequality is not exacerbated.
d. Finland should address emerging challenges of declining student motivation and digital engagement post-COVID. Strengthening teacher mentorship and student support services will sustain its education excellence. Policymakers must also ensure that innovations in educational technology do not lead to new forms of digital inequality.

Cross-cutting strategies include fostering inter-ministerial coordination between education, health, and social services, scaling up early childhood education, and embedding gender-responsive and inclusive curricula. Robust teacher professional development, community engagement, and real-time data systems are foundational to sustained progress. The pursuit of SDG 4 requires not only increased investments but also equity-driven, context-sensitive policies. Countries must adopt holistic approaches that integrate education with broader social protection and governance reforms. Comparative insights underline that while challenges differ by context, a commitment to inclusion, quality, and accountability is universal to all education systems. Learning from both developing and developed contexts provides valuable direction for countries striving to transform their education systems. By leveraging global cooperation, technology, and community engagement, nations can move closer to fulfilling the promise of quality education for all by 2030.

Implications

In light of the insights gleaned from the analysis of the SDGs, it is imperative that governments and policymakers formulate comprehensive strategies to enhance their implementation. A key recommendation is the integration of sustainability into national and local policies, ensuring that developmental initiatives align with the SDGs. This is particularly critical for SDG 4, which emphasizes Quality Education. By embedding the principles of quality and inclusivity in educational policies, governments can create systems that not only foster knowledge but also promote skills relevant to sustainable development.

Fostering collaboration among diverse sectors is crucial, especially in advancing Quality Education. Policymakers should initiate partnerships between educational institutions, businesses, and civil society organizations to create synergies that support effective learning. For example, businesses can offer internships and practical training, while Non-Governmental Organizations (NGOs) can assist in reaching marginalized communities. Such collaborations can harness the strengths of each sector, facilitating shared goals while promoting a comprehensive educational approach that empowers students across socioeconomic backgrounds.

Capacity building is equally essential for enhancing educational outcomes related to SDG 4. Many countries, particularly low-income nations, struggle to provide quality education due to inadequate infrastructure and resources. Policymakers must prioritize investments in teacher training, educational materials, and school facilities to ensure all students receive the necessary support for learning. Additionally, investing in technology can enhance educational access and quality, particularly in remote areas where traditional schooling may be less accessible. International organizations and developed countries should provide financial and technical support to boost educational capacity in these vulnerable regions.

Robust data collection and monitoring systems enable effective tracking of educational progress, especially concerning SDG 4. Policymakers are encouraged to invest in technology and digital tools that improve accountability in measuring outcomes in quality education. By establishing consistent frameworks for data reporting on educational progress, such as student performance and school equity, stakeholders can gain insights necessary for implementing effective policies. Improved data availability will enable evidence-based decision-making and adjustments to educational strategies, ensuring their alignment with the needs of diverse populations.

The implications for businesses are significant in the context of quality education. Companies should integrate SDG 4 objectives into their corporate social responsibility (CSR) initiatives and overall business strategies. By investing in educational programs, such as scholarships for underserved populations or partnerships with local schools for resource development, businesses not only give back to communities but also cultivate a skilled future workforce. Such initiatives will enhance stakeholder trust and encourage consumer loyalty—ultimately benefiting their bottom line.

Finally, strong advocacy and public awareness campaigns are necessary to galvanize support for SDG 4 and quality education. Civil society plays a pivotal role in raising awareness and mobilizing grassroots movements to promote educational access and equity. Policymakers should support efforts led by NGOs and community groups to educate the public on the importance of quality education in driving sustainable development. By engaging the public in

these discussions, stakeholders can create an inclusive environment where everyone feels empowered to contribute to achieving these ambitious goals.

CONCLUSION

This paper has explored the critical landscape of the SDGs, with a particular focus on Quality Education (SDG 4). We examined the prospects and challenges surrounding the implementation of the SDGs, highlighting the disparities in progress between high-income and low-income countries, the role of technological advancements, and the socio-economic factors that influence educational outcomes. Through an analysis of global trends, we identified significant barriers such as economic downturns, infrastructural deficiencies, and the impact of global crises like the COVID-19 pandemic. Furthermore, we unveiled the importance of collaboration among governments, businesses, and civil society in creating comprehensive strategies that ensure equitable access to quality education for all.

In response to these challenges, several recommendations were put forward to enhance the achievement of SDG 4. Firstly, it is crucial to integrate sustainability principles within national and local educational policies, fostering an inclusive and quality-driven educational environment. Collaboration among various sectors should be prioritized, creating partnerships that leverage resources and expertise. Capacity building in education, especially in low-income regions, is essential, along with investments in monitoring and data systems to track progress effectively. Businesses are encouraged to engage with educational initiatives aligned with SDG 4, enhancing their commitment to social responsibility while nurturing the next generation of skilled workers. Strong advocacy and public awareness campaigns will also support community engagement, empowering individuals to contribute to educational advancements. Collectively, these recommendations emphasize the need for a holistic approach to education that addresses both quality and accessibility in the pursuit of sustainable development.

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CONFLICT OF INTEREST

"The authors declare no conflict of interest."

REFRENCES

[1] M. Lomazzi, B. Borisch, and U. Laaser, “The Millennium Development Goals: experiences, achievements and what’s next,” *Glob. Health Action*, vol. 7, no. 1, p. 23695, Feb. 2014, doi: https://doi.org/10.3402/gha.v7.23695

[2] J. B. S. O. A. Guerra, M. Hoffmann, R. T. Bianchet, P. Medeiros, A. P. Provin, and R. Iunskovski, “Sustainable development goals and ethics: building ‘the future we want,’”

Environ. Dev. Sustain., vol. 24, no. 7, pp. 9407–9428, Jul. 2022, doi: https://doi.org/10.1007/s10668-021-01831-0
[3] D. Shaw, "Women's right to health and the Millennium Development Goals: promoting partnerships to improve access," *Int. J. Gynaecol. Obstet.*, vol. 94, no. 3, pp. 207–215, Sep. 2006, doi: https://doi.org/10.1016/j.ijgo.2006.04.029
[4] "The 17 goals." Accessed: Apr. 26, 2025. [Online]. Available: https://sdgs.un.org/goals
[5] D. Le Blanc, "Towards Integration at Last? The Sustainable Development Goals as a Network of Targets," *Sustain. Dev.*, vol. 23, no. 3, pp. 176–187, May 2015, doi: https://doi.org/10.1002/sd.1582
[6] J. Tosun and J. Leininger, "Governing the interlinkages between the Sustainable Development Goals: Approaches to attain policy integration," *Global Chall.*, vol. 1, no. 9, p. 1700036, Dec. 2017, doi: https://doi.org/10.1002/gch2.201700036
[7] J. Song and C.-H. Jang, "Unpacking the sustainable development goals (SDGs) interlinkages: A semantic network analysis of the SDGs targets," *Sustain. Dev.*, vol. 31, no. 4, pp. 2784–2796, Aug. 2023, doi: https://doi.org/10.1002/sd.2547
[8] S. Reinders, M. Dekker, and J.-B. Falisse, "Inequalities in higher education in low- and middle-income countries: A scoping review of the literature," *Dev. Policy Rev.*, vol. 39, no. 5, pp. 865–889, Sep. 2021, doi: https://doi.org/10.1111/dpr.12535
[9] S. K. Ahmed *et al.*, "Teacher professional development for disability inclusion in low- and middle-income Asia-Pacific countries: An evidence and gap map," *Campbell Syst. Rev.*, vol. 18, no. 4, p. e1287, Dec. 2022, doi: https://doi.org/10.1002/cl2.1287
[10] K. Szadkowski, "The public good and higher education in Poland," *Compare*, pp. 1–19, Oct. 2021, doi: https://doi.org/10.1080/03057925.2021.1987194
[11] N. T. T. Pham, C. H. Nguyen, H. T. Pham, and H. T. T. Ta, "Internal quality assurance of academic programs: A case study in Vietnamese higher education," *SAGE Open*, vol. 12, no. 4, p. 215824402211444, Oct. 2022, doi: https://doi.org/10.1177/21582440221144419
[12] C. Huang, C. Wang, T. Rani, and S. A. U. Rehman, "Digitalization's role in shaping climate change, renewable energy, and technological innovation for achieving sustainable development in top Asian countries," *Energy Environ.*, Jun. 2024, doi: https://doi.org/10.1177/0958305X241258799
[13] R. Martínez-Peláez *et al.*, "Role of digital transformation for achieving sustainability: Mediated role of stakeholders, key capabilities, and technology," *Sustainability*, vol. 15, no. 14, p. 11221, Jul. 2023, doi: https://doi.org/10.3390/su151411221
[14] P. X. Hoa, V. N. Xuan, N. T. P. Thu, and L. M. Huong, "Nexus of innovation, foreign direct investment, economic growth and renewable energy: New insights from 60 countries," *Energy Rep.*, vol. 11, pp. 1834–1845, Jun. 2024, doi: https://doi.org/10.1016/j.egyr.2024.01.050
[15] V. Aust, A. I. Morais, and I. Pinto, "How does foreign direct investment contribute to Sustainable Development Goals? Evidence from African countries," *J. Clean. Prod.*, vol. 245, no. 118823, p. 118823, Feb. 2020, doi: https://doi.org/10.1016/j.jclepro.2019.118823
[16] J. Izadi and B. Madirimov, "Effect of foreign direct investment on sustainable development goals? Evidence from Eurasian countries," *J. Sustain. Finance Invest.*, pp. 1–20, Jan. 2023, doi: https://doi.org/10.1080/20430795.2022.2163846
[17] U. S. Bhutta, A. Tariq, M. Farrukh, A. Raza, and M. K. Iqbal, "Green bonds for sustainable development: Review of literature on development and impact of green bonds," *Technol. Forecast. Soc. Change*, vol. 175, no. 121378, p. 121378, Feb. 2022, doi: https://doi.org/10.1016/j.techfore.2021.121378
[18] Y. Ning, J. Cherian, M. S. Sial, S. Álvarez-Otero, U. Comite, and M. Zia-Ud-Din, "Green bond as a new determinant of sustainable green financing, energy efficiency investment,

and economic growth: a global perspective," *Environ. Sci. Pollut. Res. Int.*, vol. 30, no. 22, pp. 61324–61339, May 2023, doi: https://doi.org/10.1007/s11356-021-18454-7
[19] A. Aldowaish, J. Kokuryo, O. Almazyad, and H. C. Goi, "Environmental, social, and governance integration into the business model: Literature review and research agenda," *Sustainability*, vol. 14, no. 5, p. 2959, Mar. 2022, doi: https://doi.org/10.3390/su14052959
[20] R. Tylżanowski, K. Kazojć, and I. Miciuła, "Exploring the link between energy efficiency and the environmental dimension of corporate social responsibility: A case study of international companies in Poland," *Energies*, vol. 16, no. 16, p. 6080, Aug. 2023, doi: https://doi.org/10.3390/en16166080
[21] L. Ning, K. R. Abbasi, K. Hussain, R. Alvarado, and M. Ramzan, "Analyzing the role of green innovation and public-private partnerships in achieving sustainable development goals: a novel policy framework," *Environ. Sci. Pollut. Res. Int.*, Mar. 2023, doi: https://doi.org/10.1007/s11356-023-26414-6
[22] T. Yamane and S. Kaneko, "Is the younger generation a driving force toward achieving the sustainable development goals? Survey experiments," *J. Clean. Prod.*, vol. 292, no. 125932, p. 125932, Apr. 2021, doi: https://doi.org/10.1016/j.jclepro.2021.125932
[23] T. Borojević *et al.*, "Youth participation for sustainable value creation: The role and prioritization of SDGs," *Sustainability*, vol. 15, no. 23, p. 16456, Nov. 2023, doi: https://doi.org/10.3390/su152316456
[24] R. Bhattacharya and D. Bose, "A review of the sustainable development goals to make headways through the COVID-19 pandemic era," *Environ. Prog. Sustain. Energy*, vol. 42, no. 4, Jul. 2023, doi: https://doi.org/10.1002/ep.14093
[25] B. S. Ngcamu, "Climate change effects on vulnerable populations in the Global South: a systematic review," *Nat. Hazards (Dordr.)*, vol. 118, no. 2, pp. 977–991, Sep. 2023, doi: https://doi.org/10.1007/s11069-023-06070-2
[26] G. S. Smith, E. Anjum, C. Francis, L. Deanes, and C. Acey, "Climate change, environmental disasters, and health inequities: The underlying role of structural inequalities," *Curr. Environ. Health Rep.*, vol. 9, no. 1, pp. 80–89, Mar. 2022, doi: https://doi.org/10.1007/s40572-022-00336-w
[27] E. Kalaidjian and S.-A. Robinson, "Reviewing the nature and pitfalls of multilateral adaptation finance for small island developing states," *Clim. Risk Manag.*, vol. 36, no. 100432, p. 100432, 2022, doi: https://doi.org/10.1016/j.crm.2022.100432
[28] S. Baranyi, Y. Samy, and B. Washuta, "SDG16+ implementation in fragile and conflict-affected states: what do the data tell us six years into Agenda 2030?," *Confl. Secur. Dev.*, vol. 21, no. 6, pp. 727–748, Nov. 2021, doi: https://doi.org/10.1080/14678802.2021.2000812
[29] N. Angrist, P. K. Goldberg, and D. Jolliffe, "Why is growth in developing countries so hard to measure?," *J. Econ. Perspect.*, vol. 35, no. 3, pp. 215–242, Aug. 2021, doi: https://doi.org/10.1257/jep.35.3.215
[30] M. Biggeri, L. Bortolotti, D. Saccone, and M. Tassinari, "Policy and political challenges for a better world: The United States and China pathways towards the 2030 Agenda," *Ecol. Econ.*, vol. 209, no. 107821, p. 107821, Jul. 2023, doi: https://doi.org/10.1016/j.ecolecon.2023.107821
[31] M. Oweibia *et al.*, "Analyzing Nigeria's journey towards Sustainable Development Goals: A comprehensive review from inception to present," *F1000Res.*, vol. 13, p. 984, Aug. 2024, doi: https://doi.org/10.12688/f1000research.148020.1
[32] T. Kortetmäki and M. Järvelä, "Social vulnerability to climate policies: Building a matrix to assess policy impacts on well-being," *Environ. Sci. Policy*, vol. 123, pp. 220–228, Sep. 2021, doi: https://doi.org/10.1016/j.envsci.2021.05.018

[33] Y. Subramaniam and T. A. Masron, "Food security and environmental degradation: evidence from developing countries," *GeoJournal*, vol. 86, no. 3, pp. 1141–1153, Jun. 2021, doi: https://doi.org/10.1007/s10708-019-10119-w
[34] UNESCO, "Issues and trends in education for sustainable development," 2018, *UNESCO*. doi: https://doi.org/10.54675/YELO2332
[35] UNESCO, "Education for Sustainable Development Goals: learning objectives," 2017, *UNESCO*. doi: https://doi.org/10.54675/CGBA9153
[36] D. Ciuffetelli Parker and P. Conversano, "Narratives of systemic barriers and accessibility: Poverty, equity, diversity, inclusion, and the call for a post-pandemic new normal," *Front. Educ.*, vol. 6, Jul. 2021, doi: https://doi.org/10.3389/feduc.2021.704663
[37] H. K. Ochieng and C. Yeonsung, "Political economy of education: Assessing institutional and structural constraints to quality and access to education opportunities in Tanzania," *SAGE Open*, vol. 11, no. 3, p. 215824402110472, Jul. 2021, doi: https://doi.org/10.1177/21582440211047204
[38] S. Psaki, N. Haberland, B. Mensch, L. Woyczynski, and E. Chuang, "Policies and interventions to remove gender-related barriers to girls' school participation and learning in low- and middle-income countries: A systematic review of the evidence," *Campbell Syst. Rev.*, vol. 18, no. 1, p. e1207, Mar. 2022, doi: https://doi.org/10.1002/cl2.1207
[39] A. A. Trainor and P. M. Robertson, "Culturally and linguistically diverse students with learning disabilities: Building a framework for addressing equity through empirical research," *Learn. Disabil. Q.*, vol. 45, no. 1, pp. 46–54, Feb. 2022, doi: https://doi.org/10.1177/0731948720929001
[40] K. D. Regmi, "Educational governance in Nepal: weak government, donor partnership and standardised assessment," *Compare*, vol. 51, no. 1, pp. 24–42, Jan. 2021, doi: https://doi.org/10.1080/03057925.2019.1587704
[41] G. Wiggan, D. Smith, and M. J. Watson-Vandiver, "The national teacher shortage, urban education and the cognitive sociology of labor," *Urban Rev.*, vol. 53, no. 1, pp. 43–75, Mar. 2021, doi: https://doi.org/10.1007/s11256-020-00565-z
[42] M. Adato and L. Bassett, "Social protection to support vulnerable children and families: the potential of cash transfers to protect education, health and nutrition," *AIDS Care*, vol. 21 Suppl 1, no. sup1, pp. 60–75, 2009, doi: https://doi.org/10.1080/09540120903112351
[43] S. Naseer, S. Khalid, S. Parveen, K. Abbass, H. Song, and M. V. Achim, "COVID-19 outbreak: Impact on global economy," *Front. Public Health*, vol. 10, p. 1009393, 2022, doi: https://doi.org/10.3389/fpubh.2022.1009393
[44] N. Jones, M. Devonald, R. Dutton, S. Baird, W. Yadete, and K. Gezahegne, "Disrupted education trajectories: Exploring the effects of Covid-19 on adolescent learning and priorities for 'building back better' education systems in Ethiopia," *Dev. Policy Rev.*, vol. 40, no. S2, Oct. 2021, doi: https://doi.org/10.1111/dpr.12607
[45] O. B. Adedoyin and E. Soykan, "Covid-19 pandemic and online learning: the challenges and opportunities," *Interact. Learn. Environ.*, vol. 31, no. 2, pp. 863–875, Feb. 2023, doi: https://doi.org/10.1080/10494820.2020.1813180
[46] A. Bozkurt *et al.*, "A global outlook to the interruption of education due to COVID-19 pandemic: Navigating in a time of uncertainty and crisis," *Asian Journal of Distance Education*, vol. 15, no. 1, pp. 1–126, Jun. 2020, doi: 10.5281/ZENODO.3878571.
[47] M. Srinivasan, Central University of Tamil Nadu, Jishnu, and Shamala, "COVID-19 and online education: Digital inequality and other dilemmas of rural students in accessing online education during the pandemic," *World Media*, vol. 4, no. 2021, pp. 34–54, Dec. 2021, doi: https://doi.org/10.30547/worldofmedia.4.2021.2
[48] O. R. Katoch, R. Sharma, S. Parihar, and A. Nawaz, "Energy poverty and its impacts on health and education: a systematic review," *Int. J. Energy Sect. Manag.*, vol. 18, no. 2, pp. 411–431, Feb. 2024, doi: https://doi.org/10.1108/IJESM-10-2022-0007

[49] W. Elliott, "The effects of economic instability on children's educational outcomes," *Child. Youth Serv. Rev.*, vol. 35, no. 3, pp. 461–471, Mar. 2013, doi: https://doi.org/10.1016/j.childyouth.2012.12.017
[50] C. Nwoke, S. Oyiga, and L. Cochrane, "Assessing the phenomenon of out-of-school children in Nigeria: Issues, gaps and recommendations," *Rev. Educ.*, vol. 12, no. 3, Dec. 2024, doi: https://doi.org/10.1002/rev3.70011
[51] M. S. Mera, "Apprasal of the factors that hinders effective implementation of universal basic educatiom policy in public junior secondary schools in Adamawa state," *Akademika*, vol. 12, no. 02, pp. 381–394, Dec. 2023, doi: https://doi.org/10.34005/akademika.v12i02.3009
[52] H. A. Salihu and A. O. Shodunke, "Crisis in crisis: Boko Haram violence, orphaned children, and the precariousness in human survival in Northeast Nigeria," *Med. Confl. Surviv.*, vol. 40, no. 3, pp. 233–255, Sep. 2024, doi: https://doi.org/10.1080/13623699.2024.2361382
[53] J. Heckert, A. Pereira, C. Doss, E. C. Myers, and A. Quisumbing, "Structural transformation and gendered transitions to adulthood among rural youth: Cross-national evidence from low- and middle-income countries," *J. Dev. Stud.*, vol. 57, no. 4, pp. 614–634, Apr. 2021, doi: https://doi.org/10.1080/00220388.2020.1808196
[54] O. Adejumo, U. Efobi, C. Iheonu, and O. Ogwuike, "Teachers' attendance and pupils' human capital formation: Evidence from rural schools in Nigeria," *Afr. Educ. Rev.*, vol. 20, no. 4, pp. 33–56, Jul. 2024, doi: https://doi.org/10.1080/18146627.2024.2421010
[55] I. R. Abubakar, "Multidimensional poverty among Nigerian households: Sustainable development implications," *Soc. Indic. Res.*, Aug. 2022, doi: https://doi.org/10.1007/s11205-022-02963-0
[56] A. Nwozor and B. Okhillu, "Child's rights and the challenges of educating the girl-child: Assessing the contributions of UNICEF in Nigeria," *Age Hum. Rights J.*, no. 18, pp. 285–309, Jun. 2022, doi: https://doi.org/10.17561/tahrj.v18.6520
[57] C. Jain and N. Prasad, "Identifying inter-state disparities and Socio-economic linkages," in *Quality of Secondary Education in India*, Singapore: Springer Singapore, 2018, pp. 107–146. doi: https://doi.org/10.1007/978-981-10-4929-3_9
[58] S. Ramanaik *et al.*, "Education, poverty and 'purity' in the context of adolescent girls' secondary school retention and dropout: A qualitative study from Karnataka, southern India," *PLoS One*, vol. 13, no. 9, p. e0202470, Sep. 2018, doi: https://doi.org/10.1371/journal.pone.0202470
[59] W. A. Dar, "Teaching–learning process in low-fee-private schools: perspectives of parents and school management," *SN Soc. Sci.*, vol. 1, no. 7, Jul. 2021, doi: https://doi.org/10.1007/s43545-021-00192-9
[60] G. D. Diwakar and V. Viswambaran, "Knowledge accumulation during COVID-19: Increasing digital divide and vulnerability among Indian students," in *Caste, COVID-19, and Inequalities of Care*, Singapore: Springer Singapore, 2022, pp. 103–126. doi: https://doi.org/10.1007/978-981-16-6917-0_6
[61] T. Ashokkumar, T. Russel Raj, A. Rajadurai, A. H. Abishini, and A. H. Anchani, "Analyzing the impact of the new educational policy 2020: A comprehensive review of India's educational reforms," *Eval. Program Plann.*, vol. 108, no. 102515, p. 102515, Feb. 2025, doi: https://doi.org/10.1016/j.evalprogplan.2024.102515
[62] G. McCulloch, "Finnish lessons 2.0: what can the world learn from educational change in Finland? By Pasi Sahlberg The Finnish education mystery: historical and sociological essays on schooling in Finland. By Hannu Simola," *Br. J. Educ. Stud.*, vol. 65, no. 2, pp. 265–268, Apr. 2017, doi: https://doi.org/10.1080/00071005.2017.1312818

[63] S. Altaf, A. Shehzad, and A. Sana Akhtar, "Finnish Education system and its triumph in Pisa: Lessons to learn for Pakistan," *Global Regional Review*, vol. V, no. I, pp. 479–487, Mar. 2020, doi: https://doi.org/10.31703/grr.2020(V-I).51
[64] Organisation for Economic Co-operation and Development, *Education at a glance 2022*. in Education at a glance. Paris Cedex, France: Organization for Economic Co-operation and Development (OECD), 2023. doi: https://doi.org/10.1787/3197152b-en
[65] M. Bray, "Shadow education: Comparative perspectives on the expansion and implications of private supplementary tutoring," *Procedia Soc. Behav. Sci.*, vol. 77, pp. 412–420, Apr. 2013, doi: https://doi.org/10.1016/j.sbspro.2013.03.096
[66] H. Sato and E. Uchiyama, "Digital transformation in primary and secondary education in Japan," in *Advances in Mobile and Distance Learning*, IGI Global, 2023, pp. 177–199. doi: https://doi.org/10.4018/978-1-6684-4423-8.ch008
[67] A. Gupta, "Global and local discourses in India's policies for early childhood education: policy borrowing and local realities," *Comp. Educ.*, vol. 58, no. 3, pp. 364–382, Jul. 2022, doi: https://doi.org/10.1080/03050068.2022.2062949
[68] E. Parlar Dal and S. Dipama, "Assessing the EU's and Turkey's Triangular Development Cooperation partnership in the Sub-Saharan Africa," *Alternatives (Boulder)*, vol. 47, no. 4, pp. 209–234, Nov. 2022, doi: https://doi.org/10.1177/03043754221135411
[69] W. R. Teter and L. Wang, "Monitoring implementation of the Tokyo Convention on recognition: a multi-stakeholder approach to the internationalization of higher education in the Asia-Pacific," *Int. J. Comp. Educ. Dev.*, vol. 23, no. 3, pp. 157–174, Aug. 2021, doi: https://doi.org/10.1108/IJCED-10-2020-0075