Research Paper

Achieving SDGs in Bangladesh: A meta-analysis on challenges and opportunities

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Abstract

A global and comprehensive vision for a sustainable future is embodied in the UN Sustainable Development Goals (SDGs). Bangladesh began the implementation of SDGs from the beginning by including them in the national development plan. The obstacles and difficulties this country faces, have hindered its progress toward SDGs. Sector-based plans have emerged, and those approaches have created opportunities to reduce the difficulties related to the SDGs. The purpose of this paper is to explore the challenges, opportunities, and strategies related to Bangladesh's SDGs across several fields. This research follows the systematic literature review process through the PRISMA tool for selecting the best-fit articles for meta-analysis. Meta-analysis helped determine the lagging goals and identify the underperforming sectors in the race to accomplish SDGs. The study finds out the progress of Bangladesh towards SDGs with the identification of the challenges besides analyzing the contribution of different sectors to implementing SDGs. According to the analysis, Bangladesh faces several challenges that affect all SDGs. The most prominent sectors for each research topic have been identified through qualitative data analysis with NVivo software. In achieving the SDGs, the institutional sector faces the most challenges, to overcome which it is also employing the most strategies. Along with achieving the SDGs, the opportunities that are being created in other sectors are also highlighted. This study reveals the problems and areas that require additional attention.

Keywords: Sustainable Development Goals, meta-analysis, challenges, Bangladesh

1. Introduction

A secure, fair, and sustainable environment that supports the well-being of all people is the global vision known as the Sustainable Development Goals (SDGs). Their worldwide shared vision is to guarantee that no country is left behind and to ensure that all individuals have a common duty to work toward achieving this vision (Fleming et al.,

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2017; Osborn et al., 2015). In September 2015, 193 UN member states accepted *Transforming our world: The 2030 agenda for sustainable development*, a comprehensive global development agenda with 17 goals and 169 targets as well as 43 implementation strategies (Mawla & Khan, 2020; Jahan et al., 2022; Paul, 2022). Being an active contributor to the global process of developing Agenda 2030, Bangladesh began implementing it from the very beginning by incorporating SDGs into the country's development strategy in the same year 2015 (Mawla & Khan, 2020). The SDGs were incorporated into the country's seventh five-year plan (7FYP), which was given importance while establishing the 7FYP's key areas so that achieving plan goals and targets can also help the SDGs be achieved (GED, 2020). The UN announced the member countries' average performance for SDG attainment in 2016, a year after the SDGs' declaration. The progress toward the 17 SDGs is displayed in the SDG index and dashboards reports for Bangladesh. Based on the percentage of goals achieved, the Index assigns a ranking to each country (Rickels et al., 2016). Bangladesh had a score of 44.4 in 2016, placing it at the 118th rank out of 149 countries. With a score of 56.2 in 2017, Bangladesh ranked 120th; Bangladesh was 111th out of 156 countries with a score of 59.3 in 2018 (Mehta et al., 2018).

To achieve sustainable development, Bangladesh will need to overcome numerous obstacles, including the financial crisis, ineffective policies and their implementation, poor coordination between government departments, a scarcity of funds for research, a shortage of skilled labour, limited information availability, etc. (Arafath, 2022). Besides this, Bangladesh is experiencing difficulties in achieving the SDGs due to issues like integrating the SDGs with regional, local, and national development plans, creating an institutional framework that can carry out the SDGs, raising money, gathering data for evaluation and monitoring, and creating strong multi-stakeholder partnerships (Jahan et al., 2022). Not just in Bangladesh, but across the globe, sustainable development is currently the most urgent challenge. The major difficulty is balancing the expansion of the global economy with a process of growth that is both socially inclusive and ecologically responsible (Rahman, 2021a). Each government ministry or division of Bangladesh is jointly in charge of accomplishing a particular aim under the SDGs. A mapping exercise was carried out to designate a lead position to a ministry, division, or organization in order to identify pertinent ministries/divisions. The mapping was completed using an action plan framework, which included activities, suggested global indicators for performance evaluation, and current policy instruments (GED, 2020). The SDGs of Bangladesh have been localized with the approval of a set of 39 priority indicators. With the inclusion of one indicator based on district/upazila development issues, these indicators represent the 17 targets that the SDG Working Team determined in light of the 7FYP. Other goals will be accomplished with the aid of these

indicators' quicker implementation. Thirteen of the indicators are based on country circumstances, while the remaining 26 are taken from the global SDG indicator list (Khatun et al., 2020; Rahman, 2020a).

Moreover, SDGs are useful tools that generate a variety of opportunities in both developed and developing countries. These goals not only help a country solve its issues but also open up new opportunities for growth in the future. This research aims to understand the progress of Bangladesh towards SDGs through a systematic literature review by identifying the issues faced while achieving SDGs and by analyzing the contribution of different sectors to implementing SDGs. A systematic review and meta-analysis are effective in merging smaller studies into one large one and they can also improve the accuracy of the findings.

2. Methodology

PRISMA, which stands for Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Moher et al., 2009) has been used in this research for article selection and analysis. PRISMA's flow diagram illustrates how information moves through the various stages of a systematic review. Meta-analyses and systematic reviews are two of the key components of PRISMA (Mardani et al., 2017). It also offers a flow diagram to help practitioners with the processes of systematic literature review, including identification, screening, eligibility, and inclusion (Parmentola et al., 2021). This method's main objective is to plan, select, and analyse research to collect and integrate information from the literature.

The first stage in the PRISMA flowchart is identification, which determines how many articles are already available on the topic. At this point, the available articles are collected by searching them using relevant keywords. The main two keywords of this research are 'Sustainable Development Goals' and 'Bangladesh' and the articles have mainly been collected using Google Scholar, Science Direct, ResearchGate, and PubMed databases. A total of 1,034 scholarly papers had been extracted at the initial stage of the search based on their availability and their relationship to the keywords mentioned. The next phase was searching the documents to see whether there were any redundant or duplicated materials. After removing 208 records due to duplication, 826 papers remained. The screening phase was then conducted by reading titles, abstracts, and keywords, and 612 irrelevant papers were removed for various reasons. For example, some papers were published before 2011, some were not published in English, some were unrelated to this research, and others did not have complete text available. Several book chapters and presentations were also removed.

In total, 214 papers remained which were then tested with some inclusion criteria. According to PRISMA guidelines, the third and fourth review processes are concerned

with defining eligibility requirements and including papers in the final sample. The suitability of each paper has been assessed by carefully reading and reviewing all full-text articles that met the eligibility criteria. Notable among the eligibility criteria were articles being about Bangladesh and the SDGs, addressing all or some of SDG goals, and mention of any sector connected to the SDGs. Articles that only conceptualized SDGs were excluded under this criterion. Based on these criteria, 122 papers were excluded at this stage.

In the end, out of the 58 articles left after screening, 50 that met the inclusion criteria were selected based on their data availability for conducting meta-analysis. The process of selecting and filtering papers is shown in Figure 1.
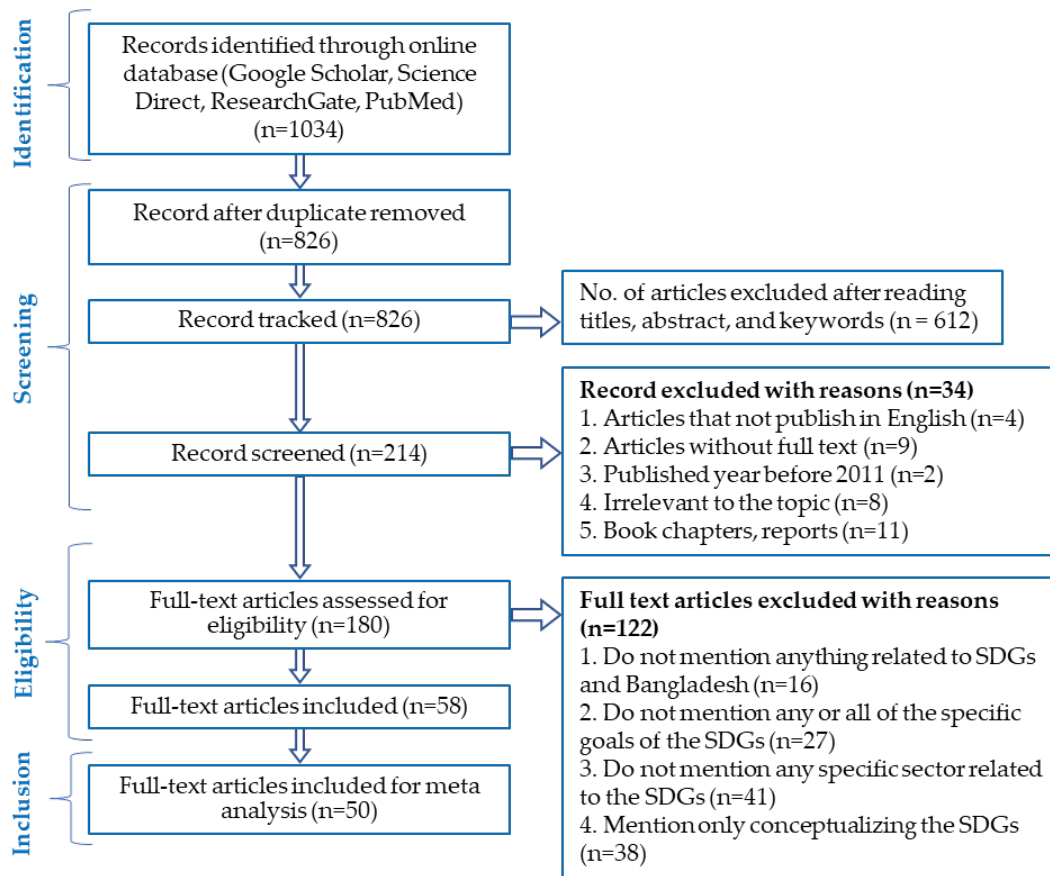

Figure 1. Systematic review framework used in this research based on PRISMA protocol.
Source: Authors' records (2023).

3. Review-based meta-analysis of articles

Meta-analysis first provided an overview of what information was available from the articles or what types of topics they incorporated and the count of words that appear most frequently in the text. The most important and relevant terms for this study are displayed in Figure 2. In this context, it is most appropriate and common to use phrases like sustainable, development, Bangladesh, opportunity, implementation, government, economic, environment, population, employment, health, policy, water, etc. The most frequently used words are in bold and larger font sizes, while the less frequently used terms are in smaller type. The word cloud is generated through NVivo software, and it essentially offers a summary of this endeavour, using pertinent coded terms to illustrate the SDGs, Bangladesh, and its challenges, strategies, and opportunities.

Figure 2. Overview of the selected articles. Source: Authors' analysis (2023).

It can be observed here that there are enough areas addressed to allow for objective-wise assessment, making it possible to do both quantitative and qualitative research. The analyses done are explained in the next section.

3.1. Progress of Bangladesh towards SDG achievement

One of the primary criteria for this study was the selection of articles that addressed SDGs. Most of the articles (62%) focused on the 17 SDGs as a whole. The research focus of the other 38% of the articles was on a specific SDG. According to the analysis of the articles, the number of articles on particular goals such as SDGs 6, 7, 9, 10, and 13 is lower than that for other goals. In other words, less information is expected for those goals. But

the analysis of goal-wise multiple responses reveals a completely different scenario. There are 31 articles in total that address every sustainable development goal. An overview of all 17 goals is included in these articles. Because of this, multiple response analysis based on the total information may produce a higher number for a goal even when there are fewer articles or pieces of information regarding that particular goal. The number of multiple responses for each goal is quite close, as seen in Figure 3. As a result, there is no goal with a paucity of information. However, there is more information available for Goal 3 (good health and well-being) and Goal 11 (sustainable cities and communities), whereas Goals 5 (gender equality) and 16 (partnerships for the goals) have comparatively less information.
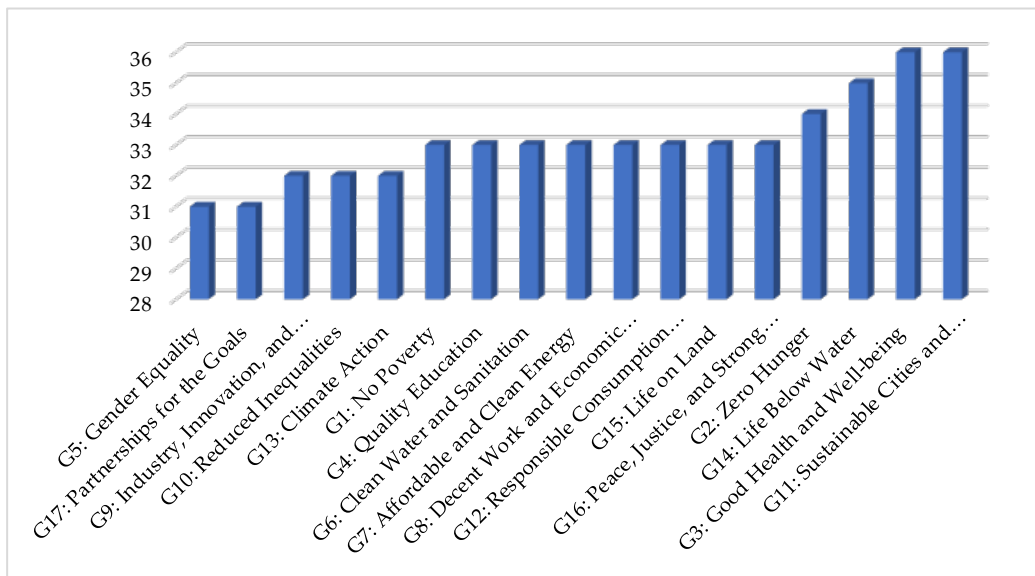
Figure 3. Goal-wise article frequency (multiple responses). Source: Authors' analysis (2023).

The SDGs can be distributed among the three pillars of sustainability—social, environmental, and economic. Social sustainability is primarily indicated by Goals 1 to 7, 11, and 16. Economic sustainability is represented by Goals 8 to 10 as well as Goals 12 and 17. The sustainability of the environment is also indicated by Goals 13 to 15. Each article includes a variety of keywords that indicate the major topics of the article. In other words, by using those keywords, one can quickly understand all of the article's major themes. From the 50 articles, significant keywords were gathered, integrated, and separated into three sustainability pillars according to goals and presented by word clouds. This has allowed the gathering of all relevant topics about each sustainability pillar in one frame. In this situation, Figure 4 reveals that there is a considerably small number of articles linked to economic and environmental sustainability. The majority of

the themes are related to social sustainability. The articles sufficiently cover all of the goals related to social sustainability. Unfortunately, not all of the goals related to economic sustainability are adequately addressed here, and some goals are covered to a very limited extent. The topic of environmental sustainability has received considerable attention in the articles.

In the social sustainability cloud, some words—like development, governance, planning, energy, etc.—are larger than others. This suggests that most research is being done on these subjects. A wide range of subjects, including management, inclusivity, safety, health, and agriculture, are also the subject of ongoing research (Figure 4). The literature related to the topics of agriculture are on, among others, agricultural biotechnology (Ahmed & Yeasmin, 2022), nature-based solutions (Smith et al., 2021), and so on. For health-related issues, topics include institutionalizing community-focused maternal, newborn, and child health strategies (Story et al., 2017), and so on. For inclusivity, the related literature deal with organisational gap analysis (Rahman, 2021a). In comparison, the most researched aspect of environmental sustainability is climate, while environmental, marine, and coastal challenges have got less attention. Microfinance is also the most extensively studied topic in the economic sustainability cloud. Institutions, the economy, and other themes have recently been studied. It is evident from the word clouds that a lot of study on social sustainability is being done, covering a wide range of topics. However, the range and number of study topics in environmental and economic sustainability are relatively limited, meaning less research has been done on economic and environmental sustainability.

Figure 4. Topics related to social, environmental, and economic sustainability. Source: Authors' analysis (2023).

Diverse publications on achieving the SDGs have described multiple goals. When the goals are considered collectively, each has made some progress. Through this, the overall progress can be understood at a glance, and what improvements have been accomplished and where additional attention is required are indicated.

In terms of measuring the progress of Bangladesh based on the three dimensions of sustainability and 17 goals, it can be seen that with the adoption of various strategies, Bangladesh's progress is improving even though many challenges are emerging. As a result, it is reasonable to conclude that Bangladesh is making slow but steady improvements. All the analyses under objective one pinpoint to the current situation of Bangladesh regarding SDGs, where goal-wise progress, three pillars of sustainability, and the significance of challenges, strategies, and opportunities have explained which goals are in good shape and which are not, and the analyses also clearly describe the gaps in achieving the SDGs.

3.2.   Emphasis on achieving the SDGs

Although the articles covered a wide range of topics related to Bangladesh's SDGs, the most concentrated topics are highlighted. A total of 17 contents were directly addressed by the articles, according to the analysis. The analysis takes into consideration both primary-focused topics and other secondary topics. Consequently, based on the commonalities, 17 distinct content types are categorized into seven macro levels. It is evident from the multiple response analysis that 'challenges' is the most common of the seven contents (Table 1). Thus, 33 articles out of 50 discuss challenges associated to the SDGs. The majority of those papers addressed the challenges that Bangladesh must overcome to meet the SDGs.

Table 1. Focussed topic-wise article frequency (multiple responses).

$Multiple response Frequencies

		Responses		Percent of cases
		Number	Percent	
$Multiple response[a]	Conceptualization	8	8.2%	16.0%
	Progress status	8	8.2%	16.0%
	Strategy	8	8.2%	16.0%
	Performance	12	12.2%	24.0%
	Policy initiatives	13	13.3%	26.0%
	Recommendation	16	16.3%	32.0%
	Challenges	33	33.7%	66.0%
Total		98	100.0%	196.0%

a. Dichotomy group tabulated at value 1.

Source: Authors' analyses (2023).

Measuring the extent and type of topics connected to each SDG is an essential aspect of the research. In this regard, it is noted that the majority of the articles address the SDGs and the difficulties Bangladesh confronts in accomplishing each of those goals. Many articles cover a variety of topics to address Goals 3 (good health and well-being), 11

(sustainable cities and communities), and 14 (life below water) (Figure 5). Again, by counting the number of topics mentioned for each goal, it has been found that a total of 134 topics are mentioned in the 50 articles. Among these, one-third are challenge-related. On the contrary, no topics were found specific to Goals 5 and 17, which are about gender equality and partnership for the goals, respectively. Though it would appear that there has not been much research on these issues, in reality, that is not true. Because some articles have been found which do not highlight any specific SDG goals but contain information on the overall topic. Thus, it is not like there is no information available on Goals 5 and 17. Since these articles cover all SDG goals and there are a sufficient number of them, it may be concluded that all goal-related topics are addressed in research.

These analyses essentially give a detailed understanding of the types and concentration of topics related to all SDGs, and putting them into a graph will make the issue easier to understand for everyone—not just for researchers. This simplifies the process of deciding which goals to concentrate on more and what topics must be resolved, as well as the best methods for doing so. Analyzing the topics concerning the goals reveals how many types of topics and which topics are covered by each goal. Figure 6 shows that Goal 11 (sustainable cities and communities) covers the most types of topics (five in total), which are represented by the following categories: conceptualization, challenges, performance, policy initiatives, and recommendations. Goals 6 (clean water and sanitation), 9 (industry, innovation, and infrastructure), 10 (reduced inequalities), 13 (climate action), and 15 (life on land) deal with the least types of issues (two in total), which are represented by challenges, policy initiatives, recommendations, performance, and progress status. It can be concluded that even while each goal has a wide range of topics covered, challenges is the most prevalent topic. The topics associated with Goals 3 (good health and well-being), 7 (sustainable cities and communities), and 14 (life below water) are covered in the greatest number of articles, and the majority of topic types are found for Goals 2 (zero hunger), 3 (good health and well-being), 11 (sustainable cities and communities), 14 (life below water), and 16 (peace, justice, and strong institutions).
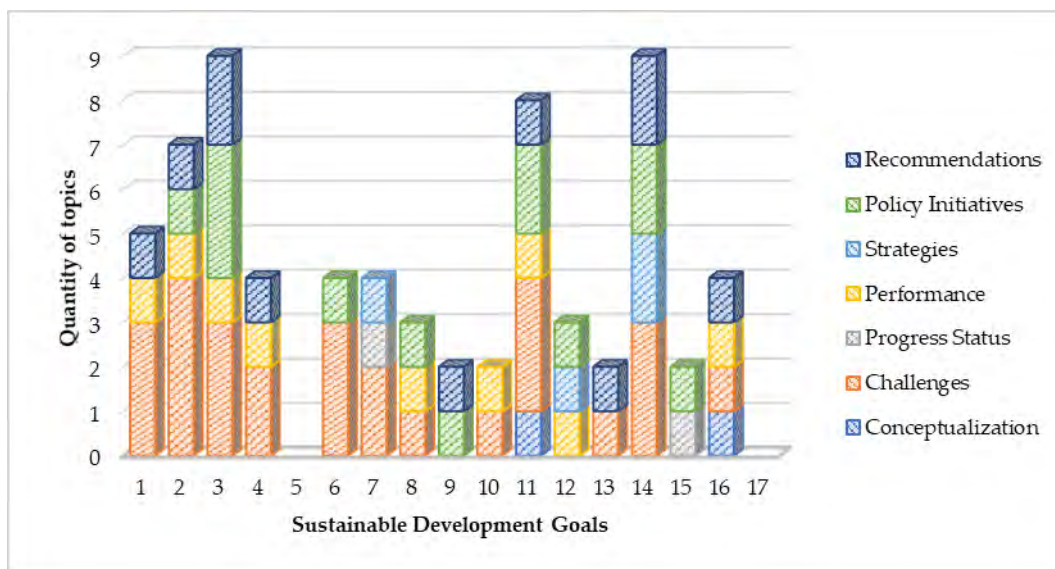
Figure 5. Type and quantity of topics associated with SDGs. Source: Authors' analysis (2023).

Thus, the second objective of the study is attained by this analysis, which primarily explains the associated topics and also the state of those goals depending on the quantity and types of topics. This makes it possible to decide quickly how to address any problem and achieve any goal.

3.3.   Contribution of different sectors to the SDGs' implementation

Many organizations in different sectors are working in Bangladesh to achieve the SDGs; their contributions and associated concerns are examined in this research as well. The selected articles discuss numerous topics to illustrate how various sectors are contributing to the attainment of SDG goals. Conceptualization indicates a thorough discussion of the relevant sectors and SDGs in the article (Figure 6). The policies that the sector has taken for implementation to meet the SDGs are referred to as policy initiatives. In a similar vein, the strategy indicates the approach taken by the sector. Performance refers to the sector's current performance, whereas progress status explains Bangladesh's progress toward reaching the SDGs through that sector. Challenges highlight the obstacles that the sectors must overcome to achieve the SDGs and suggestions indicate the pathways to overcome them. Reviewing the articles reveals that the sectors discussed include development, governance and institutions, foodstuff, economy, climate and environment, energy, natural resources, education, health, etc. In addition, certain articles discuss all sectors in general without focussing on any particular one.
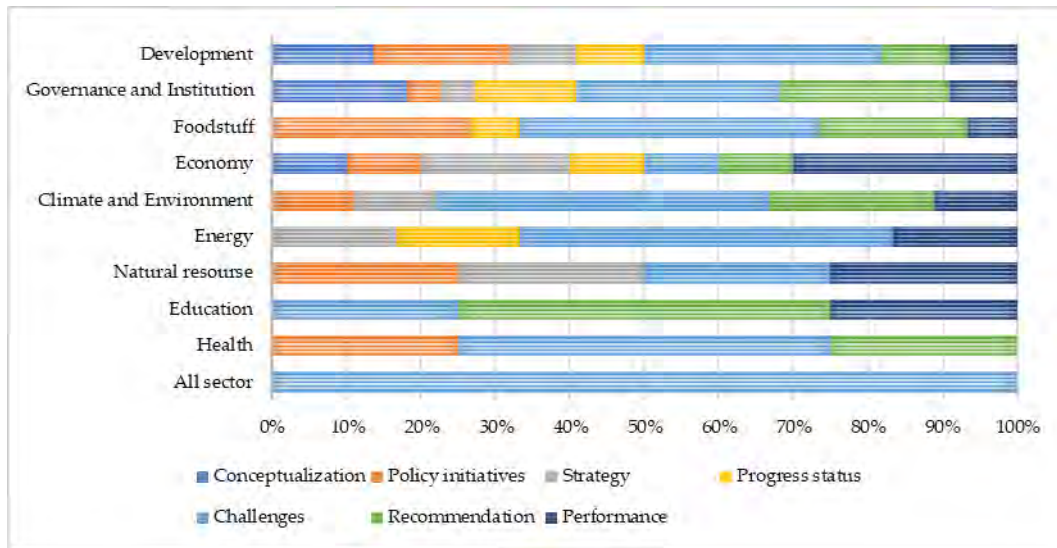
Figure 6. Current state of several sectors in the pursuit of SDGs through multiple topics.
Source: Authors' analyses (2023).

The analysis revealed that challenges are mentioned the most in all sectors compared to other topics. Although several things are mentioned about each sector, here it is seen that development, governance and institutions, foodstuff, economy and energy sector are ahead in terms of progress compared to other sectors, i.e., these sectors have already made progress in achieving SDG (Arafath, 2022; Azizuddin et al., 2021; Hasan et al., 2019; Mawla & Khan, 2020; Rahman, 2021a) (Figure 6). Several sectors have already adopted strategies and policy measures to meet the SDG targets, those are development, economy, governance and institutions, climate and environment, and natural resources (Alam, 2018; Datta & Rabbany, 2016; Sunny et al., 2021; Uddin et al., 2021). Articles that cover all sectors in general tend to concentrate mainly on the challenges that exist. Particular sectors are not discussed, hence other topics are not covered much. Figure 6 shows the topics covered by each sector.

In addition to the numerical comparisons, it is clear from the articles that each sector, with the associated sub-sectors, has made a significant contribution to the achievement of sustainability (Figure 7). For example, there are numerous sub-sectors mentioned while discussing the development sector. Tourism makes up the major portion of these. Because it guarantees both environmental and economic sustainability by raising GDP and protecting the natural environment (Bhuiyan & Darda, 2021). On the contrary, women's empowerment and social service initiatives generate chances for women to start their own businesses and strengthen the capability of the most impoverished, which promotes social and economic sustainability (Gouranga et al., 2019). The sectors of health and education receive the most recognition for creating social and economic

sustainability (Ahmed, 2022; Akther, 2019). In a similar vein, the natural resource, climate, and environment sectors aim to attain environmental sustainability through many sub-sectors, while also indirectly promoting social sustainability (Hossain et al., 2021; Smith et al., 2021; Sunny et al., 2021). Local government, monitoring, parliament, public administration, public-private partnerships, and other institutions are covered under governance and institutions (Figure 7). These simultaneously provide several types of institutions to work in coordination and oversee their proper operation. Different institutions try to achieve various forms of sustainability; some may do it from a social perspective, some from an economic perspective, and others from an environmental standpoint. Therefore, when diverse institutes collaborate, they can jointly attain a wide range of sustainability (Ahmed & Karim, 2022; Loorbach, 2010). Because of this, the significance of institutions and good governance in establishing sustainability cannot be denied. In addition, social sustainability can be achieved alongside economic sustainability through microfinance, manufacturing, and circular economy (Maeen et al., 2022; Uddin et al., 2020). In a similar vein, social sustainability can be achieved through agriculture, fisheries, food fortification, aquaculture, etc. (Khan et al., 2022; Rahman et al., 2020). Therefore, while some sectors may contribute more than others, the overall contribution of each sector is noteworthy (Ahmed & Karim, 2022). Their combined efforts are advancing the country's sustainability as a whole.
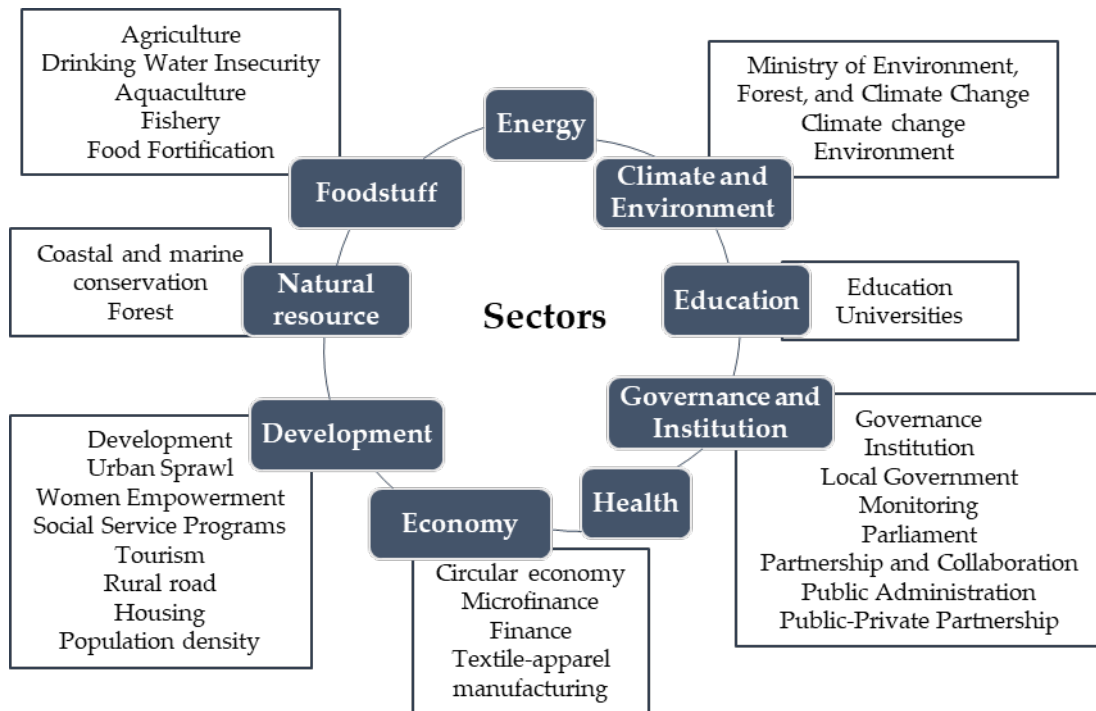

Figure 7. Contribution of the sectors to achieving SDGs. Source: Authors' analyses (2023).

Figure 8 visualizes the progress of SDG implementation in Bangladesh and shows that the analysis covered the study's first objective. The second and third objectives of this study are also fulfilled by this graphic, which also lists the number of challenges, strategies, and opportunities in each aspect that work for achieving SDGs. In this hierarchical diagram, every coded SDG challenge, strategy, and opportunity is represented. This makes it simple to comprehend how different aspects are positioned to overcome these challenges, addressing them with appropriate strategies, and ultimately generating opportunities for them. The opportunities are shown in a single mother node because none of the opportunities have any aspects as child nodes. Strategies and Challenges has numerous child nodes, which are shown in each of the boxes. The size of the boxes shows how many and significant each problem is in each location. The smallest box in this diagram, the agricultural aspect, contains the fewest challenges in achieving SDGs. Institution has the largest box within challenges in this graphic, which implies that numerous institutional challenges have emerged throughout the implementation of the SDGs. Institutions also take up the largest box in the strategies category, while water takes up the smallest, showing that institutional sectors are where strategies are applied most frequently given that institutional sectors have the most challenges.

Among the major challenges that the institutional sector experiences are a lack of good governance, corruption, lack of management, coordination, and leadership, overlapping jurisdiction, and a lack of transparency (Hossen & Anwar, 2011; Jahan et al., 2022). The challenges associated with the environment include deforestation, poor air quality in Dhaka, and inadequate management of many industries, such as the chemical, garments, brick, and fertilizer industries (Ahmed, 2019; Alam, 2018). Creating a national adaptation plan, reducing air pollution, banning plastic shopping bags, updating Bangladesh's action plan and strategy on climate change, expanding plantations, etc. are some of the strategies taken to address these issues (Ahmed, 2019; Nath et al., 2020). A shortage of baseline data for assessing progress toward SDGs is a major issue with data monitoring (Ishtiaque et al., 2020).

One of the challenges in the field of social protection is the increase in child marriages, the lack of corporate social responsibility, increase of social challenges, and the measures taken to address them are added social protection in the sixth five-year plan, to apply *Developmental disabilities integrated education policy 2018* to protect the rights of the disabled and to develop administration of public and private orphanages etc. (Khatun & Saadat, 2021; Paul, 2022). To understand the present SDG situation in Bangladesh, it is necessary to grasp this strategy. Thus, with each aspect, obstacles to achieving the SDGs and the strategies adopted to address them are discussed as well as some of the opportunities are identified. The opportunities include creating formal and informal employment opportunities, increasing economic growth, creating 98 special economic

zones, developing national strategies, creating smart farming opportunities, providing universal access to education and health, addressing food security, promoting gender equality and women entrepreneurship, ensuring sustainable, long term and environmentally friendly use of government resources etc. (Ahmed & Karim, 2022; Barua, 2019; Gouranga et al., 2019; Sarker et al., 2017; Smith et al., 2021; Zheng et al., 2021).
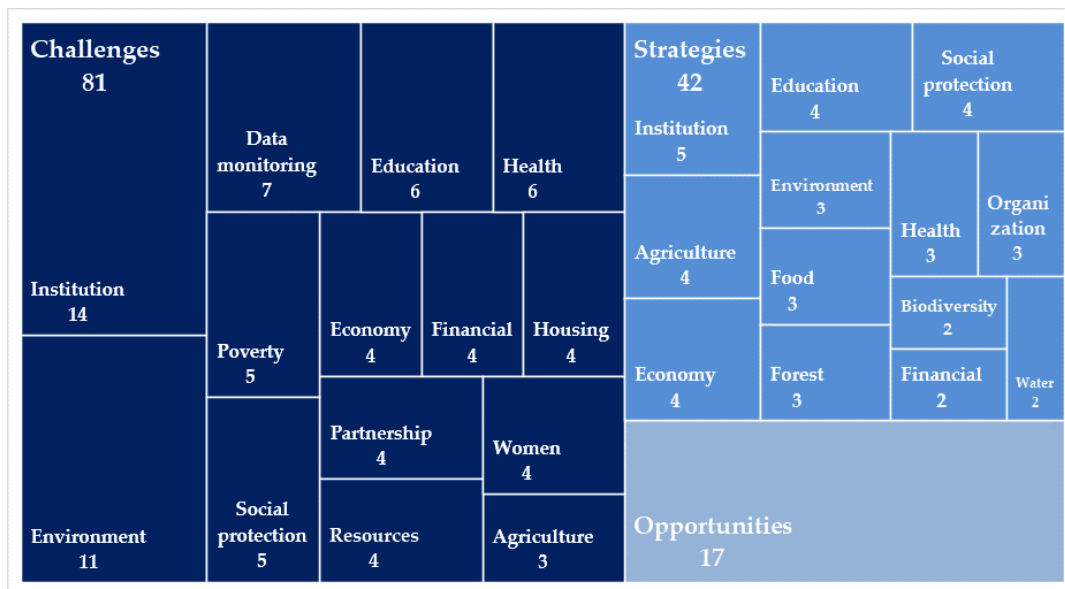
Figure 8. Most reported SDG challenges, strategies and opportunities for various aspects. Source: Authors' analysis (2023).

This section has provided an understanding of different sectors and aspects and their circumstances concerning SDGs, which was the third objective of the study. This study demonstrates that many aspects face various difficulties in achieving their goals, and it also provides opportunities and recommendations for future development in each aspect.

4.   Conclusion

The governments and different sectors often take various actions to achieve the SDGs, which are undoubtedly one of their top priorities. In this paper, Bangladesh's progress toward accomplishing these goals has also been evaluated through a methodical and comprehensive review of the literature. There has been a lot of research recently on the many issues and goals that have been addressed, along with the various strategies and techniques that have been taken to achieve them. In this study, a set of structured methods were employed to choose relevant publications using the PRISMA tool, and the data gathered from the articles were subsequently utilized for meta-analysis and

additional research. Meta-analysis has provided insights into the article's purpose-focused topic, other descriptive data, number of studies being conducted on specific goals and industries, and number of topics discussed. This shows which objectives and industries are receiving much attention and which need more concentration. The three primary themes of opportunities, strategies, and challenges have got the most attention. Consequently, these challenges became the subject of content analysis, which resulted in a thorough understanding of the related micro components. This study demonstrates that Bangladesh is encountering multiple difficulties in accomplishing all of the SDGs, with various sectors bearing the brunt of these challenges.

The institutional sector is encountering the greatest challenges. Opportunity is being generated simultaneously in multiple domains. However, it is generally agreed that effective policy alignment with the SDG objectives and the capacity to overcome barriers are necessary for the SDGs to be implemented successfully. Good governance is essential to overcome institutional challenges; to overcome environmental issues, carbon emissions must be reduced, and carbon footprints must be analysed; to monitor data, appropriate database management is required; to address health, education, poverty, and social protection, the planning and management equity is required. and to address urbanization and housing, an appropriate planning is required. The successful implementation of the SDGs requires to have robust institutional frameworks and efficient governance for the developing country like Bangladesh. Adequate efforts from all sectors and effective cooperation amongst all types of institutions can significantly speed this country's progress.

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Appendices

Table A1. Progress status of Bangladesh for achieving SDG.

Social sustainability	
Goal 1	The National Strategy for Accelerated Poverty Reduction (NSAPR) was created by the government to implement the 5th Five Year Plan and overall poverty is reducing on average by 0.62 percent yearly.
	Social Protection Programmes (SPPs) has been established to address the issues of poverty, vulnerability, and marginalization.
	The percentage of households utilizing social safety net programs rose from 13% in 2005 to 27.8% in 2016.
Goal 2	National Social Security Strategy (NSSS) was updated with Bangladesh Delta Plan 2100.
	The hunger situation has improved with the hunger statistic dropping from 20.8 percent in 2000 to 16.3 percent in 2007 and the amount of agricultural land is decreasing by 0.5% annually due to several issues.
Goal 3	Between 1997 and 2017, the mortality rate for children under the age of five dropped from 102.8 deaths per 1,000 live births.
	In comparison to the minimum WHO-recommended level of 2.28 doctors for every 1000 people, the country only has 0.5 doctors and 0.2 nurses for every 1000 inhabitants.
	Bangladesh has the lowest per capita healthcare expenditure that was 3.0% of GDP in 2015, which is lower than the average for lower-middle income countries.
Goal 4	The third primary education development program (PEDP-III), stipend program, reaching out-of-school children (ROSC) project, school feeding program in poverty-prone areas, second chance education program, and basic literacy program are just a few of the initiatives the government is putting into action to meet the goals
	From 1991 to 2017, youth literacy rate climbed from 35.3% to 47.5%.
	But the public expenditure on education is around 2 percent of Bangladesh's GDP which is one of the lowest in South Asia and among developing countries.
Goal 5	Bangladesh has taken several legislative and policy measures to support women's rights to achieve SDG 5, like Overseas Employment and Migration Act 2013; reformulation of the Women Development Policy (WPD) 2011; Domestic Violence (Prevention and Protection) Act 2010; Domestic Violence Prevention and Protection Rules 2013; Prevention and Suppression of Human Trafficking (PSHT) Act 2012; Hindu Marriage Registration Act 2012; National Children's Act 2013; Child Marriage Restraint Act 2014 and others.

	A key challenge hindering the implementation and monitoring of SDG 5 is a lack of adequate gender-sensitive data, including data that is disaggregated by sex, age, and other characteristics.
Goal 6	From 25.3% in 2000 to 46.9% in 2015, a larger percentage of the population has access to basic sanitation services.
	To aid in the implementation of SDG 6, the government has created an action plan, a national policy on water, water supply, and sewerage, as well as water laws and environmental protection guidelines
Goal 7	Compared to 1990, when only 8.5% of the population had access to electricity, this number had increased to 75.9% by 2016.
	A total of 53 projects, with a combined capacity of 14,202 MW, are in development to help meet the electricity output targets established by the Power System Master Plan (PSMP) 2016. By 2023, some new power plants will start producing electricity.
	Assuming 35% of the target is met, it is expected that the rest of the gap will also be filled by 2030 if peace progress is made to meet the SDG 7 goals.
Goal 11	The percentage of the urban population living in slums has drastically decreased from 87.3% in 1991 to 55.1% in 2014.
	LGED carried out 20 projects for improving urban services with government funding.
	Following completion of the ongoing urban development projects, 7,360 km of roads, 1,502 km of drains, 3,329-meter bridges and culverts, 36 bus and truck terminals, 22 cyclone shelters, 152 km of footpaths, 40 solid waste disposal sites, and 35 faecal sludge treatment facilities will be built.
	Following completion of the ongoing urban development projects, 7,360 km of roads, 1,502 km of drains, 3,329-meter bridges and culverts, 36 bus and truck terminals, 22 cyclone shelters, 152 km of footpaths, 40 solid waste disposal sites, and 35 faecal sludge treatment facilities will be built.
Goal 16	In order to guarantee free flow of information and people's access to information, the Right to Information Act 2009 was enacted.
	Out of the 169 SDG targets, the public sector is attempting to achieve 111 of them. Even while it is a remarkable improvement, not all ministries are operating at the same level due to the huge organizational gap.
	Bangladesh is unlikely to reach 21 of the SDGs' 2020 deadlines, and as of yet, there is no national framework or strategy for responsible, sustainable consumption and production. Because of this, the Public Procurement Rules of 2008 do not guarantee sustainable public procurement (SPP).
Economic sustainability	
Goal 8	Bangladesh has already increased its real GDP growth per capita by a significant amount because of its over 8% average annual GDP growth rate and declining population growth.

	From 82.2 percent in 2010 to 91.3 percent in 2017, more people were employed in the informal sector.
	There still exists a huge gender gap in labour force participation.
Goal 9	The development of resilient infrastructure, the promotion of inclusive sustainable industrialization, and the encouragement of innovation have all been given top priority by the government in its overall policy framework.
	The JICA-funded "Cross-Border Road Network Development Project" will upgrade Bangladesh's local, regional, and national transportation and logistics systems.
	Large and medium-sized businesses and the ready-to-wear industry have fuelled growth in Bangladesh's manufacturing sector.
Goal 10	The government has created a mapping document with SDG requirements assessment and financing strategy that covers all ministries, divisions, agencies, and SDG targets for quick implementation of the policy agenda in order to facilitate and coordinate efforts to reduce inequality.
	The bottom 40% of the population's proportion of the national income has decreased from 17.4% in 1991 to 13% in 2016.
	Income inequality in Bangladesh has always been a major policy issue and it has some measurement, aggregation, and localization challenges.
Goal 12	Bangladesh has started implementing smart cities, as many other countries have done.
	The promotion of garbage recycling, reuse, and composting has been a goal for smaller cities while it has remained a struggle for large metropolises like Dhaka and Chittagong.
Goal 17	Bangladesh has taken the initiative to develop an effective Aid Information Management System (AIMS) while emphasizing ensuring the development partner's policy alignment and system harmonization.
	The government has established development goals in its "Vision 2021" in response to the long-term development challenge.
	A perspective plan through 2021, a medium-term plan, the 6th FYP and 7th FYP have been developed.
Environmental sustainability	
Goal 13	The Green Climate Fund (GCF) provided funds to Bangladesh in 2018 for three initiatives, including the clean cooking program, improving coastal communities' adaptation skills, and mainstreaming climate-resilient infrastructure in Bangladesh.
	Planning for a greener Bangladesh was a goal of the Eighth Five-Year Plan (July 2020–June 2025), the Perspective Plan 2041, and the Delta Plan 2100
	Many policy documents, rules and regulations, investment programs, and active participation in international efforts for a greener Bangladesh all reflect these activities.

Goal 14	Bangladesh's total fisheries production grew from 846,144 metric tonnes in 1990 to 4,134,434 metric tonnes in 2017.
	Monitoring the marine protected areas is a major challenge for Bangladesh due to resource limitations.
Goal 15	Bangladesh's total land area that is covered by forests has declined from 11.5 percent in 1990 to 10.96 percent in 2016.
	In 2014, Bangladesh established vulture safe zones in its northeast and southwest.
	Some locations have also been designated as ecologically critical areas (ECAs) by the Department of the Environment, making them protected under the Environmental Conservation Guidelines.

Sources: GED (2020), Khatun & Saadat (2021), Rahman (2021), Rahman (2013), Hassan et al. (2016), Ahmed (2022), Aftab et al. (2020), Mawla & Khan (2020), Azizuddin et al. (2021), Haque et al. (2020), Rahman (2020a) & Sarker et al. (2017).

Table A2. Articles for meta-analysis.

No.	Article title	Author (year)	Journal
1	A study on Sustainable Development Goal 7: Future plan to achieve the affordable and clean energy Bangladesh perspective	Mawla & Khan (2020)	*2020 IEEE Region 10 Symposium (TENSYMP)*
2	Achieving Sustainable Development Goal 7: Emerging challenges for bangladesh	Haque (2020)	Unpublished manuscript
3	Achieving Sustainable Development Goal-16 in Bangladesh: The institutional issues and challenges	Jahan et al. (2022)	*Bangladesh Journal of Administration and Management*
4	Achieving Sustainable Development Goals in Bangladesh: Does population density matter?	Khatun et al. (2019)	*The Dhaka University Journal of Earth and Environmental Sciences*
5	Achieving Sustainable Development Goals in Bangladesh: Organizational gap analysis- Case Study on Ministry of Housing and Public Works	Rahman (2021a)	*Bangladesh Journal of Public Administration*
6	Achieving Sustainable Development Goals of Agenda 2030 in Bangladesh: The crossroad of the governance and performance	Rahman (2021c)	*Public Administration and Policy An Asia-Pacific Journal*
7	Achieving Sustainable Development Goals through participatory forest management: Examples from	Nath et al. (2020)	*Natural Resources Forum*

	south-eastern Bangladesh		
8	Agricultural mechanization in Bangladesh: Status and challenges towards achieving the Sustainable Development Goals (SDGs)	Rahman et al. (2020)	*Agricultural Mechanization in Asia, Africa & Latin America*
9	Analysing the legal framework of marine living resources management in Bangladesh: Towards achieving Sustainable Development Goal 14	Shamsuzzaman & Islam (2018)	*Marine Policy*
10	Analyzing the role of collaboration and partnerships in implementing Sustainable Development Goals in Bangladesh	Ahmed & Karim (2022)	*Journal of Community Positive Practices*
11	Analyzing urban sprawl and sustainable development in Dhaka, Bangladesh	Wang & Sarker (2020)	*Journal of Economics and Sustainable Development*
12	Assessing the progress and pitfalls of the Ministry of Environment, Forest, and Climate Change in achieving SDGs in Bangladesh	Rahman (2021b)	*Bangladesh Journal of Public Administration*
13	Bangladesh's achievement and strategy from Millennium Development Goals to Sustainable Development Goals	Rahman (2013)	*SSRN Electronic Journal*
14	Challenges ahead to Sustainable Development in Bangladesh: A concern for future generation	Arafath (2022)	*International Journal of Sustainable Development Research*
15	Challenges and opportunities in artisanal fisheries (Sonadia Island, Bangladesh): The role of legislative, policy and institutional frameworks	Alam et al. (2021)	*Ocean & Coastal Management*
16	Climate sensitivity of wheat yield in Bangladesh: Implications for the United Nations Sustainable Development Goals 2 and 6	Hasan et al. (2019)	*Land Use Policy*
17	Coastal and marine conservation strategy for Bangladesh in the context of achieving blue growth and Sustainable Development Goals (SDGs)	Islam & Shamsuddoha (2018)	*Environmental Science and Policy*
18	Compatibility of rural roads for achieving the targets of the Sustainable Development Goals 3.6, 9.1 and 11.2 in Bangladesh	Acharjee et al. (2022)	*Journal of Civil Engineering (IEB)*

19	Contribution of universities in the implementation of SDGs: Perspective Bangladesh	Akther (2019)	*IOSR Journal of Business and Management*
20	Drinking water insecurity in southwest coastal Bangladesh: How far to SDG 6.1?	Hossain et al. (2021)	*Water*
21	Environmental governance and sustainable development in Bangladesh: Millennium Development Goals and Sustainable Development Goals	Ahmed (2019)	*Asia Pacific Journal of Public Administration*
22	Factors affecting the sustainability performance of financial institutions in Bangladesh: The role of green finance	Zheng et al. (2021)	*Sustainability*
23	Financing Sustainable Development Goals: A review of challenges and mitigation strategies	Barua (2019)	*Business Strategy & Development*
24	Fisheries in the context of attaining Sustainable Development Goals (SDGs) in Bangladesh: COVID-19 Impacts and future prospects	Sunny et al. (2021)	*Sustainability*
25	Food fortification in prevention of micronutrient deficiencies of children under 5 years in Bangladesh and its effects on Sustainable Development Goals	Khan et al. (2022)	*Journal of Food Science and Nutrition Research*
26	Green microfinance promoting Sustainable Development Goals (SDGs) in Bangladesh	Uddin et al. (2021)	*International Journal of Islamic Finance*
27	Identifying major challenges to achieve 'SDG 13': Bangladesh in context	Talukder (2021)	*BiLD Law Journal*
28	Implementation of health and health related Sustainable Development Goals: Progress, challenges and opportunities – A systematic literature review	Aftab et al. (2020)	*BMJ Global Health*
29	Implementation of the Sustainable Development Goals (SDGs) in Bangladesh: Domestic challenges and regional considerations	Khatun & Saadat (2021)	*South and South-West Asia Development Papers*, UNESCAP
30	Influence of circular economy phenomenon to fulfil global Sustainable Development Goal: Perspective from Bangladesh	Azizuddin et al. (2021)	*Sustainability*

31	Localisation of Sustainable Development Goals (SDGs) in Bangladesh: An inclusive framework under local governments	Sarkar et al. (2022)	*Sustainability*
32	Mainstreaming Sustainable Development Goals into local government of Bangladesh: An exploratory study	Khan et al. (2018)	*Dynamics of Public Administration*
33	Nature-based solutions in Bangladesh: Evidence of effectiveness for addressing climate change and other Sustainable Development Goals	Smith et al. (2021)	*Frontiers in Environmental Science*
34	Overview of the challenges to achieve Sustainable Development Goals in Bangladesh	Uddin & Uddin (2018)	*The International Journal of Social Sciences and Humanities Invention*
35	Problems and challenges of public administration in Bangladesh: Pathway to sustainable development	Sarker et al. (2017)	*International Journal of Public Administration and Policy Research*
36	Problems and possibilities of good governance in Bangladesh: Hurdles to achieve sustainable development	Hossen & Anwar, (2011)	*Public Policy and Administration Research*
37	Public-private partnership for achieving Sustainable Development Goals: A case study of Khulna, Bangladesh	Haque et al. (2020)	*Public Administration and Policy An Asia-Pacific Journal*
38	Remote sensing-based research for monitoring progress towards SDG 15 in Bangladesh: A review	Ishtiaque et al. (2020)	*Remote Sensing*
39	Role of biogas in achieving Sustainable Development Goals in Rohingya refugee camps in Bangladesh	Chowdhury et al. (2022)	*Sustainability*
40	Role of Islamic microfinance institutions for Sustainable Development Goals in Bangladesh	Uddin et al. (2020)	*Journal of International Business and Management*
41	Role of women entrepreneurship on achieving Sustainable Development Goals (SDGs) in Bangladesh	Gouranga et al. (2019)	*The Business and Management Review*
42	SDG 4: A review of challenges - Bangladesh perspective	Akther (2022)	*International Journal of Multidisciplinary Informative Research and Review*

43	Sustainable Development Goals and Bangladesh: The role of Parliament	Datta & Rabbany (2016)	*International Journal of Development Research*
44	Strategies for achieving Sustainable Development Goals (SDGs) in South Asia: Lessons from policy simulations	Kumar et al. (2016)	*South and South-West Asia Development Papers*, UNESCAP
45	Sustainable development and environmental protection in Bangladesh: Challenges and opportunities	Alam (2018)	*BiLD Law Journal*
46	Sustainable Development Goals and social service programs in Bangladesh: An analysis	Paul (2022)	*Space and Culture, India*
47	Textile-apparel manufacturing and material waste management in the circular economy: A conceptual model to achieve Sustainable Development Goal (SDG) 12 for Bangladesh	Maeen et al. (2022)	*Cleaner Environmental Systems*
48	Tourism for Sustainable Development Goals (SDGs) achievement in Bangladesh	Bhuiyan & Darda (2021)	*Bangladesh Journal of Public Administration*
49	Transition from Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs): Blueprint of Bangladesh for implementing the Sustainable Development Goals (SDGs) 2030	Ashraf et al. (2019)	*Medicine Today*
50	Unequal access to health care facilities and its impact on achieving Sustainable Development Goals: Bangladesh perspective	Ahmed (2022)	*Journal of Community Positive Practices*