8 Readiness of South Asian Countries to Achieve SDG 6 Targets by 2030 in the Sanitation Sector

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Abstract

In 2015, the United Nations Member States adopted the Sustainable Development Goals (SGDs) with the intent of bringing the world to a state of life-changing zeros—zero poverty, hunger, AIDS, and discrimination against women and girls. Historically, it has never been easy to achieve global targets and available estimates show that before COVID-19 pandemic, progress remained uneven and most countries were not on track to meet the goals by 2030. Some gains were visible including the decline of many communicable diseases, decline of the share of children and youth out of school, and improvement in access to safely managed drinking water. In spite of these gains, many Asian countries are behind other developing countries, in terms of key indicators for SDG 6 targets. The purpose of this paper is to review and examine the current progress of SGD 6 targets among selected countries in South Asia. The paper will specifically examine how these countries are working to achieve sanitation-related SGD targets 6 by 2030. We use a case study approach as our analytical framework, which is suitable for studying a contemporary situation to which local "real-life" context is intrinsically linked and where the research team has little or no control. We conduct a cross-country analysis to illustrate strategies that other countries can potentially adopt to move toward achieving their SGD targets and propose effective recommendations for the sanitation sector in these countries.

Keywords

Sustainable development goals · South Asia · Sanitation · Wastewater · Indicators

8.1 Background and Justification

Globally, water and sanitation services are major challenges for policymakers. The international community including the United Nations has been developing various strategies to improve the current situation. As part of this process, the United Nations (UN) member states formally adopted the Sustainable Development Goals

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J. Rajapakse (ed.), *Safe Water and Sanitation for a Healthier World*, Sustainable Development Goals Series, https://doi.org/10.1007/978-3-030-94020-1_8

(SDGs) agenda on September 25, 2015 (United Nations, 2020a; UN Water, 2021). The 17 SDGs, and the associated 169 targets with 232 indicators, aim to end poverty, hunger, and inequality; act on climate change and the environment; improve access to health and education; care for people and the planet; and build strong institutions and partnerships. It is worth highlighting that these goals are not developed in isolation but were developed to improve the previous Millennium Development Goal (MDG),[1] which ended in 2015. Notwithstanding, some members made significant progress on MDG goals. This paper, however, focused on the recent SGDs agenda.

It is paramount to assess the status of these goals over the last few years of implementation. A recent report by the United Nations shows that progress remains uneven and most of the countries were not on track to meet the goals by 2030 (United Nations, 2020a). What is important is that this progress will be impacted by the current COVID-19 pandemic as well. Any policy development and assessment need to factor the impact of the pandemic. In spite of these, there have been some gains before the pandemic, for instance, the share of children and youth out of school has fallen; the incidence of many communicable diseases has declined; access to safely managed drinking water has improved; and women's representation in leadership roles has been increasing. At the same time, the number of people suffering from food insecurity was on the rise, the natural environment continued to deteriorate at an alarming rate, and dramatic levels of inequality persisted in all regions. While many studies have looked at the progress of these 17 SGDs, we decided to focus on the SGDs 6—sanitation and water.

Achieving SDG 6 is a national responsibility. More than anything, politicians and policymakers at the national level need to set bolder priorities. Researchers, investors, and other stakeholders must make sure that decision-makers are clear about the economic case: when we invest in water and sanitation, there is a catalytic effect on other areas such as health, education, and agriculture and job creation. On this indicator, the global community has made progress on key indicators. For the Asian countries, despite good progress in some components of the goal, such as the reduction of open defecation, overall progress is slow. The biggest hurdle for the region is water stress, where the situation has significantly worsened since 2000 and is likely to continue to regress unless collective action is taken. To achieve the 2030 targets, the region needs to build greater capacity for participatory water and sanitation management and water-use efficiency (United Nations, 2020b).

In 2019, the UN Water launched the SDG 6 Global Acceleration Framework, with the full backing of the United Nations family, to mobilize action across governments, civil society, the private sector, and the UN to better align efforts, optimize financing, and enhance capacity and governance. Making sure that there is water and sanitation for all people, for all purposes, by 2030 will help future-proof global society against the many and varied threats coming down the line. Our immediate, shared task is to establish safe water and sanitation services in homes, schools, workplaces, and health care facilities. Ultimately, it is essential to integrate new approaches, with improved governance and coordination across sectors and geographical borders.

In this paper, we review the progress made by selected Asian countries on SDG 6. The aim of the study is to assess the current state of these countries and evaluate the barriers that limit their progress in achieving targets by 2030. The rest of the paper is organized as follows: We present the methods used for the research and then outline the key results for all the countries. Then, we present the current and future states of the countries.

[1]The legacy and achievements of the MDGs provide us with valuable lessons and experience to begin work on the new goals. However, for millions of people around the world the job remains unfinished. We need to go the last mile on ending hunger, achieving full gender equality, improving health services, and getting every child into school beyond primary. The SDGs are also an urgent call to shift the world on a more sustainable path (https://www.mv.undp.org/content/maldives/en/home/sustainable-development-goals/background.htmlUNDP).

Finally, we look at the policies and recommendations even beyond the SDG 6 for the Asian countries.

8.2 Methodology

We used a case study approach with embedded units of analysis (Yin, 2003). The case study framework is suitable for studying a contemporary situation to which local "real-life" context is intrinsically linked and where the research team has little or no control (Geneviève et al., 2015). We focused on the SGD 6, which includes eight global targets that are universally applicable and aspirational. The review is limited to targets 6.1, 6.2, and 6.3 due to data availability and time limitations (Table 8.1). We applied the indicators to selected countries in Asia. The selected countries are Afghanistan, Pakistan, India, Nepal, Bhutan, Bangladesh, and Maldives. In each country, we focused on the key indicators and compared year-over-year values, where appropriate. In most cases, we used the year 2000 as the baseline year and compared to 2017. Where the recent data is available, we used that instead of existing old data. This is an opportunity to highlight that there are limited data for these countries. Conversely, information on population, macroeconomic factors, and contribution of various sectors to the economy was relatively easy to find from various international databases.

Table 8.1 SGD 6 targets and selected indicators

Targets	Indicators
Target 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all	6.1.1 Proportion of population using safely managed drinking water services
	1. Population using safe drinking water (%)
	2. Household with access to piped water supply (%)
	3. Basic water supply coverage (%)
Target 6.2 By 2023, achieve access to adequate and equitable sanitation and hygiene for all	6.2.1 Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water
	1. Households using improved sanitation facilities, which are not shared (%)
	2. Proportion of population using latrines (%)
	3. Sanitation coverage (%)
Target 6.3 By 2030, improved water quality	6.3.1 proportion of safety treated wastewater
	Proportion of untreated industrial wastewater (%)

8.2.1 Study Area[2]

All the countries selected for the study are located in Asia and are in the SDG classification as central and southern Asia region. *Afghanistan* has a total population of 38 million and 58 people per km^2. Majority of the population lives in the rural areas and the country occupies a total area of 652,860 km^2 with most of its land being used for agriculture and other uses. The country has 78 billion USD per year and GDP per capita of 2065 USD per year. Agriculture and services constitute the major sectors of the economy. *Pakistan* has a total area of 770,880 km^2, which is slightly higher than Afghanistan, but surprisingly close to the size of Bhutan. In terms of land use by sector, agriculture uses 48%, 2% for forestry, and a substantial use goes to the service sectors. Pakistan has a population of 216 million and 281 people per km^2. About 37% of the population lives in urban areas and 63% lives in rural areas. The country has a GDP of 1 trillion USD per year and 4690 GDP per capita per year. In terms of valued added by sectors, 54% comes from services, 22% from agriculture, and 18% from industry. *India* has a population of 1.4 trillion and 460 people per km^2. About 66% of the people live in rural areas and primarily work in the agricultural sector. India, one of the populous nations in the world

[2]Information presented in this section are UN Water database (https://www.sdg6data.org/country-or-area).

has a GDP of 9 trillion USD per year and GDP per capita of 6700 USD per year. Major contributors of the GDP are from service sector (49%), industry (25%), and 16% from agriculture. India and Pakistan both operate service-based economies. *Sri Lanka* has a total population of 22 million and 348 people per km^2. Majority of the population lives in the rural areas (81%) and the country occupies a total area of 62,710 km^2 with most of its land being used for agriculture (44%), forestry (33%), and other uses. The country has a GDP of 285 billion USD per year and GDP per capita of 13,078 USD per year. Agriculture (7%) and services (58%) constitute the major sectors of the economy. About 27% of the GDP comes from the industrial sector. *Nepal* has a total population of 28 million and 200 people per km^2 and smaller in size and the number of people when compared with Pakistan and India. Similarly, to other countries, majority of the population lives in the rural areas and the country occupies a total area of 143,350 km^2 with most of its land being used for agriculture, forestry, and other uses. The country has 97 billion USD per year and GDP per capita of 3417 USD per year. Agriculture (24%) and services (51%) constitute the major sectors of the economy. *Bhutan* has a total population of 763,092 and 20 people per km^2. About 42% of the population lives in urban areas, while 58% lives in rural area. The country sits on a total land area of 38,144 km^2 and has 72% of land for forestry and the rest for agriculture. The country has 9 billion USD per year and GDP per capita of 11,832 USD per year. Agriculture (16%) and services (43%) constitute the major sectors of the economy. About 36% of the GDP comes from the industrial sector.

Bangladesh has a total population of 163 million and 1253 people per km^2. Majority of the population lives in the rural areas and the country occupies a total area of 130,170 km^2 with most of its land being used for agriculture, forestry, and other uses. The country has 775 billion USD per year and GDP per capita of 4754 USD per year. Agriculture (13%) and services (53%) constitute the major sectors of the economy. About 30% of the GDP comes from the industrial sector. *Maldives* has a population of 530,953 and 1770 people per km^2. About 60% of the population lives in urban areas, while 40% lives in rural area. The country sits on a total land area of 300 km^2 and has 72% of land for other sectors, 3% for forestry, and the rest for agriculture (26%). The country has 10 billion USD per year and GDP per capita of 19,531 USD per year. Agriculture (5%) and services (70%) constitute the major sectors of the economy. About 12% of the GDP comes from the industrial sector.

Bhutan and Maldives are the two countries with a different distribution of people, where most people live in the urban areas than in the rural areas. In addition, their economies depend on services than agriculture or forestry.

8.3 Situational Analysis

In this section, we present the current projects and policies various countries in the study area have implemented toward achieving the goals of the SGDs. The emphasis is on sanitation and wastewater use for diverse purposes.

8.3.1 Afghanistan

Historically, Afghanistan struggles in improving sanitation, particularly when it comes to rural sanitation because of harsh local environmental conditions. Also, decades of conflict and weak governance have curbed investment in public infrastructure and made enforcing relevant sanitation and hygiene regulations difficult. Afghanistan's harsh conditions and rough terrain impede the expansion and maintenance of public infrastructure, including water supply and sanitation systems. Cities across the country are growing at rates double the current average in Asia. While many countries struggle with population growth rates due to natural birth, Afghanistan's urbanization and shifting demographics are driven by the increasing number of people displaced by fighting in the countryside, refugees who are returning from Pakistan and Iran, and rural residents who are looking for economic opportunities. According to the Global Water

report in 2021,[3] only 63% of Afghans have access to basic drinking water, and only 39% have access to basic sanitation. Afghanistan also has no functioning sewage and wastewater treatment systems, and existing septic management systems are informal.

Poor sanitation exposes people, mainly children and elders, to life-threatening diseases. This issue also affects women and girls, putting them at risk for both physical and psychological damage. It affects menstrual, pregnancy, and postnatal periods and creates an unsafe environment when in these periods. In rectifying the situation, the U.S. Agency for International Development (USAID) worked with the United Nations Children's Fund (UNICEF) to support the Afghan government and civil society to increase access to safe drinking water and community sanitation facilities and improve hygiene practices in households, schools, and health centers for at least 525,000 Afghans in 17 priority rural provinces (USAID, 2021).

As part of the nationalization process of the SDGs, the Afghanistan government developed national targets and indicators and adopted key goals including SGD 6. The government is also committed to aligning all its strategies, agendas, developmental plans, priorities, and policies in line with the development goals to achieve the adopted goals and targets until 2030. Current assessment indicates that a little more than 80% of families have toilets or latrines, only about 43% are improved and safe—meaning they hygienically separate human waste from human contact. It is important to note that open defecation continues to be a dangerous challenge in Afghanistan because human waste near waterways and living environments spreads diseases quickly and puts children and their families at risk (UNICEF, 2021).

Open defecation is an issue that many countries face on a daily basis; however, it has been an astonishingly prevalent issue in Afghanistan. It places many of the individuals and families leaving near waterways in much danger as human waste spreads disease quickly. To combat this issue, UNICEF alongside the Ministries of Rural Rehabilitation and Development, Public Health and Education have collaborated to end open defecation by 2025. They are pushing for the Community-Led Total Sanitation approach, which advocates for people to build and use their own latrines.

8.3.2 Pakistan

Pakistan is one of the countries that achieved the MDG goals in 2015, reducing by half the proportion of people without sustainable access to basic sanitation: this included increasing rural access to sanitation to 67% from 23% in 1991 (World Bank, 2018b). Notwithstanding the disparities between rural and urban areas, many studies suggested the government needs to do more to improve sanitation in all areas. Interestingly, fecal sludge management is gaining attention, as treatment of waste from pit latrines is expensive, neglected, and poorly developed (Junaid, 2016). It has been documented that very little investment has been made in the management of fecal sludge or wastewater in the country. About 42% of households in rural Punjab do not access or connected to drains (World Bank, 2018). In situations where drains exist, they are commonly open drains with no treatment of effluents, leading to water and soil contamination. Only 10% of households in rural Punjab and 1% of households in rural areas have access to covered or underground drains connected to their toilets (World Bank, 2018). In urbans and rural areas, about 4.1% and 59%, respectively, have access to toilets connected to sewer systems: in urban households mainly rely on flush toilets connected to septic tanks (World Bank, 2018). The opportunity to have toilets connected to drainage system is a good indicator for safety for the communities and the environment. The Government's Pakistan Vision 2025 commits to increasing the proportion of the population with access to improved sanitation to 90%, halving the incidence of diarrhea, and halving the food insecure population (World Bank, 2017).

[3] https://www.globalwaters.org/wherewework/asia/afghanistan

Following the 2010/2011 floods, the Government of Pakistan developed the Pakistan Approach to Total Sanitation (PATS) as a country specific strategy to scale up sanitation programs, particularly in rural areas to end open defecation (UNICEF, 2015). PATS endorses several models including community-led total sanitation, school-led total sanitation, component sharing, sanitation marketing, and disaster response (Edouard-Tiberghien, 2016). It is backed by strong political will and increasing budget allocations (Edouard-Tiberghien, 2016). In 2014, the Government of Punjab began implementing PATS in 6% of villages across all districts (World Bank, 2017). The provincial government has allocated Pakistani Rupees (PKR) 400 million (USD 2.97 million) for sanitation (UNICEF, 2015).

8.3.3 India

Improving sanitation is a major challenge to the Indian government. In 2014, less than half of Indian households had access to sanitation facilities and only 30% of the wastewater and sewage originating in urban areas were treated. Since 2014, India has been implementing a well-targeted and time bound strategy to transform the state of sanitation in the country. While significant progress has been achieved in recent years, this is a continuous endeavor. According to the World Bank, more than 520 million in India were defecating in the open—the highest number in the world. This figure is expected to have reduced significantly given that improving sanitation is a key priority of the government, which has introduced several flagship programs including Swachh Bharat Abhiyan to clean India, the National Rural Drinking Water Programme, and Namami Gange, which aims at the conservation of the River Ganga. The flagship initiative of the *Swachh Bharat* Mission has successfully achieved the target of making India open-defecation-free. The project constructed over 109 million household and community toilets in 2014 in 6000 villages in 706 districts across the country. Percentage of rural households with individual household toilets increased from 38.7 in 2014 to 2015 to 100 in 2019. Similarly, percentage of urban households with individual household toilets rose from 88.8 to 97.22 during the same period. The use of toilets has also dramatically increased over the last 5 years with 97% of rural households using them, as per independent third-party evaluation surveys.

Another program called The Clean India Campaign succeeded in effecting a behavioral transformation by creating a nudge, which resulted in widespread awareness to shift toward better sanitation and hygiene facilities. The program also focused on conversion of unsanitary toilets to pour-flush toilets, municipal solid waste management, raising awareness, and nudging positive behavioral change. The improvement in sanitation has had a positive influence on the life and health of women and girls. Increase in proportion of households with toilets has been found to have a positive impact on the safety of women. There are remarkable positive linkages of sanitation with health and nutrition outcomes and educational attainment of women. As part of sanitation programs, separate toilets for girls have been built in 97.43% schools across the country, which has contributed, among other factors, to improved enrolment and retention of girls in primary education.

8.3.4 Nepal

Nepal has made significant progress on SGD projects. In particular, the basic sanitation coverage in the country reached 99%. Also, the proportion of people using latrines increased from 68% in 2015 to 85% in 2019. Within the same period, untreated industrial waste in water remains the same and the country could not reach the projected target of 73% in 2019. This suggests that the SGD 6 target of achieving universal and equitable access to safe and affordable drinking water for all needs to be accelerated. Regarding basic water supply coverage, Nepal reached 91% of the population in 2019, while only half of households have access to piped water supply. Households having access to tap water supply are those that have perennial water sources located within 30 min. However, providing safe drinking

water is challenging as only 25% of the population has access to safe drinking water.

Over the years, the government created several initiatives for the WASH sector. The 20 years' Water and Sanitation Strategies, which was formulated in 1997, the National Rural Water Supply and Sanitation Policy and Strategy 2004, the National Policy for Urban Water Supply and Sanitation in 2009, and the Sanitation and Hygiene Master Plan were some of the programs implemented by the government. Presently, a Sectoral Development Plan (2017–2030), designed by the Ministry of Water Supply, is under implementation in line with the SDG of ensuring access to safe, adequate, and affordable drinking water and sanitation services to all by 2030.

Building on the priority given to this sector, more needs to be done to make progress. In these goals, the challenge to the government is ensuring equal access of WASH facilities to high- and low-income households, as well as addressing the disparity between different provinces and regions. Geographical difficulties may pose a serious challenge to the government's plans of ensuring universal access to water and sanitation to all households. Since some still use solid fuels as their primary source of energy for cooking, the targets for 2019 and 2030 are 65% and 30%, respectively. People using Liquid Petroleum Gas (LPG) for cooking and heating has increased from 18% in 2015 to 27% in 2018–2019, which is more than the target of reaching 24% in 2019. While the actual supply of energy was not sufficient a few years back, there has been substantive improvement in this sector. The per capita electricity consumption has also increased from 80 kilowatt-hour (kWh) in 2015 to 260 kWh, which is again more than the target of 230 kWh in 2019. These targets are quite ambitious considering the status of progress; efforts will need to be accelerated in the days ahead.

8.3.5 Bhutan

The government had a specific goal to ensure that by 2030 every individual and households have access to clean water in their homes and adequate sanitation (safe toilet facilities). It is to ensure improving water quality through environmental protection measures and sustainable waste management. Bhutan is endowed with water resources with an average flow of 2238 m^3/s and with 94,500 m^3 per person per year, the highest in the region. The country's water resources are best described in terms of glaciers, glacial and high altitude wetlands, rivers, river basin, groundwater, and reservoirs. In recognition of the importance of managing water resources for a secure future, Bhutan adopted Bhutan Water Policy 200884, the Bhutan Water Act, and the National Integrated Water Resource Management Plan (IWRMP). In addition to these, Water Regulation 2014 was approved and Water Safety Plan for 22 municipalities has been developed. About 10,707 households also benefit from the WASH system piloted through Community Health Pilot Project. About 99.5% of the households have access to improved water sources, with 45.5% piped water in the dwellings, 50.4% piped water in the compound, and 63% of the households that have 24 h access to drinking water (Royal Government of Bhutan, 2018). Notwithstanding that, timely and continuous water supply remains a top priority for both rural and urban households, suggesting that physical access to infrastructure does not necessarily mean having regular access to water.

In 2018, the government launched a new imitative called the 12th National Five-Year Plan. The primary aim is to reduce poverty levels. Also in the plan is a key aim to improve water and sanitation by creating a flagship program that will prioritize this sector. This is relevant as pointed out by the Annual Health bulletin (2017) that 4.1% of people in the country practice open defecation due to no access to hygienic toilets and proper water sanitation.

Bhutan is working with many other organizations to improve sanitation in the country. For instance, Bhutan joined the organization sanitation and water for all in 2017 and working with SNV Netherlands Development Organization (SNV) to develop water, sanitation, and hygiene protocols for the country and immediately increased sanitation to almost 99% in certain districts. Bhutan is making progress on the SDG 6

with its partners, and this is highly supported by the king of Bhutan (https://borgenproject.org/sdg-6/).

8.3.6 Bangladesh

In 2015, Bangladesh failed to meet the Millennium Development Goal (MDG) target of halving the proportion of population without access to improved sanitation. Much of the population mostly concentrated in hard-to-reach geographical areas or among socio-economically vulnerable populations are still using poor sanitation. According to 2015 WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) Report, only 1% of the population were practicing open defecation, 10% using unimproved latrines, 28% enjoyed shared latrines, and 61% used improved latrines (UNICEF-WHO, 2015). However, the sudden influx of almost one million Rohingya refugees in Teknaf area has put enormous pressure on drinking water and sanitation facilities. It is an extremely difficult situation to arrange safe drinking water and proper sanitation in Teknaf, although the best efforts are being made by all concerned national and international agencies. Despite these challenges, the Joint Monitoring Progress report of 2017 jointly issued by the World Health Organization (WHO) and UNICEF on open defecation in Bangladesh is to be at 0%, a tremendous achievement for a country where the same rate stood at 34% in 1990.

Concerning SGDs, the country has made much improvement on sanitation targets. For instance, in 2019, the proportion of people using safely managed drinking water services was at 47% at the national level, while 45% was observed for the urban areas and slightly higher levels recorded for the rural areas (48%). Also, within the same year, about 99% of households members used improved sources of drinking water (GED, 2020). This is an improvement from 2017 when the country was at 87%. In 2019, 85% of household members used improved sanitation facilities, which is 91% in urban areas and 83% in rural areas (GED, 2020). In the same year, 75% of households reported practicing a handwashing facility with soap and water, which is 87% in urban areas and 71.4% in rural areas (GED, 2020).

The Government of Bangladesh understands that achieving SDG 6 is critical for achieving the rest of the SDGs. Bangladesh has by now made tremendous success to ensure people's access to safe drinking water and sanitation and plans to ensure safe water for all people. The government has adopted an action plan and a national policy on water, water supply, and sewerage, environment protection rules, and water act to facilitate implementation of the SDG 6. Several activities are currently ongoing to further address the SDG 6 issues. For instance, standards for WASH in health care facilities are being established. Bangladesh is also working to establish national targets for sanitation that are both contextually appropriate and aligned with SDG 6.

For Bangladesh, SDG 6 brings in issues of equity, quality, and sustainability, which will require more nuanced, integrated, and multisectoral ways of working in the sector. Further, the "leave no one behind" theme of the SDGs requires going beyond broad-brush interventions that raise beneficiary count, to focusing on hard-to-reach areas and populations, which will require innovative, context-specific technology, and programmatic solutions. Hygiene is perhaps the most lagging area of WASH in Bangladesh, and there is evidence of widespread poor practices. Determining effective ways to improve behavior will be a key challenge of SDG 6.

8.3.7 Maldives

Population increase, urbanization and environmental changes, including climate change present a number of challenges to the water security of the country. Due to geographic dispersion of the population, management of water resources and provision of sanitation services in Maldives remains a significant challenge. The high rate of urbanization in islands such as Male' increases the pressures on supply, as well as the risk of water borne diseases.

Approximately 87% of all population (including non-administrative islands) used rainwater for drinking purposes in 2014. Hence, there is a need to increase the rainwater harvesting within the country. Currently, Maldives is moving toward an Integrated Water Resource Management (IWRM) approach to address water insecurity in a changing climate. The country faces difficulty in access to clean water during the dry season especially in the remote islands given the high transportation costs incurred in supplying emergency water. The government has made major efforts to address this issue by increasing water storage facilities in affected islands with the expectation that it will be completed by the end of 2018. The government is steadfast and committed in developing the water and sanitation sector and in the recent years, major developments have been experienced in the sector. Over the past 3 years, the population with access to adequate sewerage networks has increased from 31% (in 2013) to 48% (by the end of 2016). Achievements in the water sector demonstrate that the population with access to water supply networks has increased from 25% (in 2013), to 39% (by the end of 2016). The government targets to continue this momentum and provide access to safe water supply and adequate sewerage services to 75% of the population by the end of 2018.

8.3.8 Sri Lanka

Sri Lanka as a country progressed under the Millennium Development Goals in areas such as education, health, and poverty. In spite of the historical conflict that hinders its progress, the country made commitment to join global community for solving sustainable development goals. The government of Sri Lanka endorsed the SGDs and has made several initiatives to support the success of the agenda. As part of this agenda, Sri Lanka made notable achievement in its paths toward becoming a resilient society, including the high coverage of water supply from safe resources and sanitation facilities, near universal electrification and increasing share of population living in permanent houses (Government of Sri Lanka, 2018).

Sri Lanka has made good progress in terms of access to safe drinking water over the years. On the issue of sanitation facilities, 87% of the population possess onsite sanitation facilities, which can be considered as a significant achievement. However, the same can be said about the wastewater disposal where only 2% households currently have piped sewerage connections. The rest of the households disposes wastewater using onsite pits within the premises which could lead to various environmental and health issues, especially contamination of groundwater. The situation is particularly problematic in densely populated urban and sub-urban areas. Major sewerage facilities are available in the urban areas such as Colombo and not in the rural areas. However, the government aims to have centralized sewerage facilities for all large and strategic cities by the year 2020.

Sri Lanka has formulated several plans, policies, and programs to cover specific subsectors in the water and sanitation sector, such as the National Drinking Water Policy 2008, the National Policy of Sanitation, the Rural Water Supply and Sanitation Policy, and the Rainwater Harvesting Policy. Stakeholders have highlighted the need for an integrated policy framework for water management in Sri Lanka in the local consultations. In addition, similar to many other sectors, the lack of institutional coordination is also a challenge for the water sector. There are major national agencies and sub-national agencies involved in the supply of drinking water and drainage facilities. Proper coordination among them is essential for achieving the national targets.

8.4 Assessment and Discussions

Previous sections focus on the current progress made by the selected countries. In this section, however, we evaluate sanitation specific goals and analyze what worked well for the countries and what can be done at national, urban, and rural levels. In this assessment, we considered the

SGD 6 and focused on sanitation and wastewater indicators. Based on the data collected and evaluated, it was clear that the countries are making progress in several areas and are either developing or implementing policies to reduce the impact of unimproved sanitation crises for the people and the environment. While this is a daunting task, current data suggests that the countries are trying to achieve the said goals on target 6.

A key indicator, we focused on for this assessment is wastewater treatment. On sanitation, it is crucial to know the proportion of wastewater treated for a given country. Untreated wastewater could pose several health and environmental challenges to the people, community, and the policymakers. Available estimates show that Bhutan attained 41% of wastewater treated, Nepal had 37%, and India obtained 27%. Bangladesh had 16%, but data is not available for many other countries including Maldives, Pakistan, and Afghanistan (UN Water, 2021).

Apart from wastewater treatment, we also looked at sanitation coverage and found diverse progress for the selected countries. We examined the proportion of household using improved sanitation facilities, the data show that from 2000 to 2017, most of the countries have made significant changes in three different areas—latrines, septic tanks, and sewer connections. The analysis only focused on shared sanitation facilities as this is a common practice in many developing countries including the selected countries (UN Water, 2021). A detailed analysis reveals that only Bhutan and Maldives recorded negative changes in the proportion of population using improved latrines. While Maldives continued with the negative changes for latrines improvement in rural areas, Bhutan recorded a positive change of 6% in 2017. Over the years, India recorded a higher increase in the latrine access than all other countries at the national level while Nepal, Bangladesh, and Afghanistan maintained a positive outlook in all locations—national, urban, and rural (Table 8.2). All the countries observed a significant increase in the proportion of the population with access to septic tanks. India again had the highest access, while Maldives attained only 16% from 2000 to 2017.

Handwashing is another important indicator and we looked at basic access to this indicator for the countries. In 2020, Afghanistan had the lowest access to handwashing facility for the population and this is followed by Bangladesh (Fig. 8.1). Maldives and Bhutan recorded the highest access with this indicator, while there is no data on Sri Lanka.

8.5 Countries on the SDG 6 Ladder

At the national level, the assessment shows that the countries have made progress toward achieving the target of SGD 6. Still there are numerous challenges and the most notable one being data availability. In this section however, we looked at progress made at the national level in relation to other countries and the global index of the SGD 6. A global report on health status of 188 countries based on the health-related Sustainability Development Goals (SGD) indicators found Bangladesh to be one of the poorest performing countries in South Asia, lagged by only Nepal and Afghanistan. This report clearly shows that no country can make sustainable progress on the global health goals without addressing the critical components of water, sanitation, and hygiene (WASH). Another report on the stage of India ranked it at 115 out of 162 countries, which is a score of 61%. In terms of SDGs performance, India is lagging behind East Asia and South Asia average regional score of 65.7%. India's massive population and its sheer diversity makes the implementation of policies a difficult task and progress on SDG 6 has been moderate. The same SDG Index Report observes that if India does not pick up its pace, the country will fail to reach the SDG 6 targets for 2030. At present, India scores 56.6% in terms of its SDG 6 achievement. Pakistan secured a score of 55.6 under SDGs' global index against a far better regional average of 63.3 and is even lower than regional peers Bangladesh's 56.2 and India's 58.1. The good news, however, is that its preparedness to deliver on 2030 targets is among some of the top in the world, raising hopes that it would not be repeat-

Table 8.2 Sanitation coverage among the selected countries

Countries	Targets	2000			2017			Change (percent from 2000 to 2017)		
	Proportion of population using improved sanitation facilities (including shared)	National	Urban	Rural	National	Urban	Rural	National	Urban	Rural
Afghanistan	Latrines and other	22	18	23	41	41	41	86	128	78
	Septic tanks	5	17	1	10	34	2	100	100	100
	Sewer connections	2	8	<1	3	8	<1	50	0	–
Pakistan	Latrines and other	<1	<1	<1	12	4	16	–	–	–
	Septic tanks	15	22	12	33	18	42	120	−18	250
	Sewer connections	20	52	4	25	60	5	25	15	25
India	Latrines and other	3	10	<1	28	14	36	833	40	–
	Septic tanks	12	33	4	33	50	24	175	52	500
	Sewer connections	7	23	<1	11	30	<1	57	30	–
Sri Lanka	Latrines and other	80	75	81	93	80	96	16	7	19
	Septic tanks	6	12	5	2	4	1	−67	−67	−80
	Sewer connections	2	9	<1	4	13	2	100	44	–
Nepal	Latrines and other	9	9	9	22	15	23	144	67	156
	Septic tanks	12	39	8	49	57	47	308	46	488
	Sewer connections	4	26	<1	5	19	2	25	−27	–
Bhutan	Latrines and other	41	62	34	21	<1	36	−49	–	6
	Septic tanks	11	15	9	51	75	35	364	400	289
	Sewer connections	4	12	1	6	12	1	50	0	0
Bangladesh	Latrines and other	25	21	26	52	46	55	108	119	112
	Septic tanks	11	31	4	13	22	9	18	−29	125
	Sewer connections	3	10	<1	5	14	<1	67	40	–
Maldives	Latrines and other	8	<1	11	4	<1	6	−50	–	−45
	Septic tanks	39	9	51	36	<1	59	−8	–	16
	Sewer connections	28	86	6	60	>99	34	114	–	467

Source: United Nations Children's Fund and World Health Organization, 2019

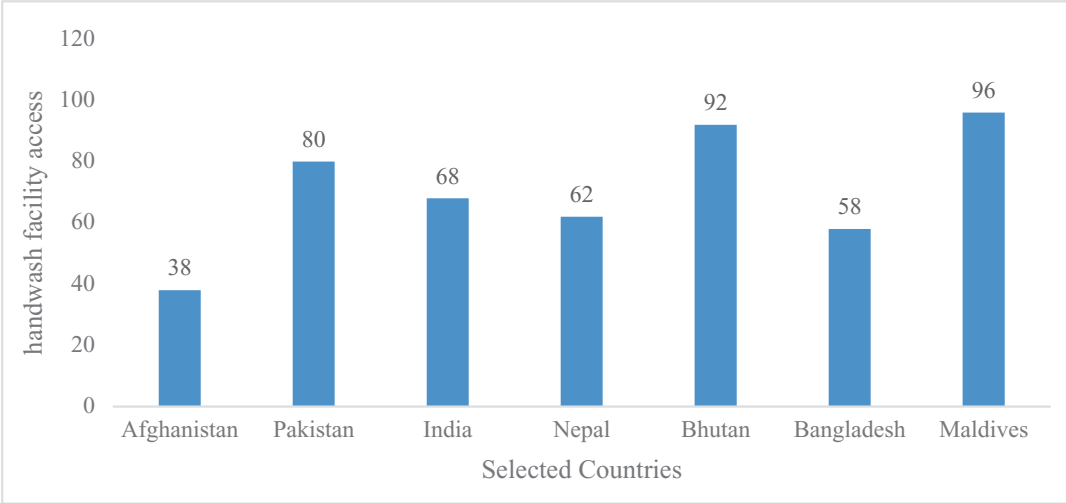

Fig. 8.1 Proportion of the population in the country have access to a basic handwashing facility, 2020

ing its dismal performance of the Millennium Development Goals (MDGs) when it missed almost all targets.

Sachs et al. (2021) recently ranked all these countries on the SDG index score and most of these countries ranked very high due to programs and policies implemented to achieve their targets. India, Pakistan, Afghanistan, and Bangladesh all ranked above 100 out of 165, while Bhutan ranked the lowest with score of 75. With respect to SDG 6 in relation to other goals, Maldives achieved 75% for this target and obtained 100% for goal number 1, 4, and 7. Thus, it is not surprising to see that it had achieved most of the SDG and it is on course to achieve a better score over all goals. On the SGD 6, India, Pakistan achieved 75% in relation to other goals, while Afghanistan obtained 25%, but had 100% goal 12 and 13. Bhutan and Nepal also obtained 75% in relation to other targets.

It is also important to look at the impact of each country's actions can have on other countries abilities to achieve the SDGs. In this context, it is better to use the spillover index, which assesses such spillovers along three dimensions: environmental and social impacts embodied into trade, economy, finance, and security. A higher score means that country causes more positive and fewer negative spillover effects. Based on this assessment, most the countries obtained a higher score except Maldives. This means that this country has less negative impacts on other countries in the trajectory of achieving the SDG 6 targets in 2030.

8.6 Status and the Way Forward

As highlighted in the previous section, these countries made progress toward achieving the SGD goals and particularly on SGD 6. We assessed the stage where each country is at with respect to SGD 6 on the sanitation indicators. In this context, we considered the indicator that deals with the proportion of the population using at least basic sanitation services. Afghanistan and Bangladesh obtained a low score, which means they are either at stagnating stage or increasing but at a decreasing rate. Maldives and Nepal obtained a score that indicate they are either on track or maintaining SGD achievement (Table 8.3). Only two countries obtained a green status on challenges, which means that most of the countries are still struggling to achieve the target on SGD 6 (Table 8.3).

As mentioned, most of the countries are developing policies and programs to monitor progress on the SGDs. For instance, Afghanistan, which

Table 8.3 Assessment of SGD 6 (sanitation and wastewater) for the countries

Country	Indicator population using at least basic sanitation services (2017) percent (2020)	Status	Indicators	Challenges
Afghanistan	43.42	→	Score stagnating or increase at less than 50% of required rate	●
Pakistan	59.87	↗	Score moderately improving, insfficient to attain goal	●
India	59.54	↗	Score moderately improving, insufficient to attain goal	●
Sri Lanka	95.78	↑	On track or maintaining SDG achievement	●
Nepal	62.1	↑	On track or maintaining SDG achievement	●
Bhutan	69.25	↗	Score moderately improving, insfficient to attain goal	●
Bangladesh	48.23	→	Score stagnating or increase at less than 50% of required rate	●
Maldives	99.37	↑	On track or maintaining SDG achievement	●

Source: Sachs et al., 2021

● SGD achieved, ● major challenge remain, ↑ on track, ↗ moderately increasing, → stagnating

obtained a low score of 43.42, has adopted the (SDSN) survey program, which is a forward-looking assessment of government efforts to achieve the SDGs. The country collects survey information on national coordination and implementation mechanisms at the central and federal level of government. The country is making progress because it has a national SGD monitoring of 178 indicators and has included SDGs in national COVID-19 recovery plan. Although the country submitted detailed plans and strategies on achieving SDGs, still, the national budget does not cover financial obligations of achieving the plans both at the national and sectoral levels. Unlike Afghanistan, Pakistan has adopted policies, developed plans to achieve the SDG, and included implementation cost in the national budget. It is not surprising to see that they obtained a slightly high score than Afghanistan and overall, its status is moderately improving. Similarly, Bangladesh, which is facing a stagnation in achieving the goals, has included implementation cost in the national budget. This is evident in recent numbers, where about 85% of the population use a safely managed sanitation service, which is 91% in urban and 83% in rural areas. Also, nearly three-fourth of the population see hand-washing facility with soap and water, which is 87% in urban areas and 71% in rural area. Still the country struggles with awareness on health and hygiene programs and need programs to strengthen this area. Bhutan is also on course of achieving the SGD 6 targets, where current number show that 99.5% of the people have access to improved water sources and about 63% of households have 24 h access to drinking water. The country has developed national plan on sanitation and hygiene with a strong focus on improving access and quality. However, the country still struggles with pressures from climate change and population growth, especially in urban areas and inadequate water and sanitation infrastructure and services are major bottlenecks. India is not different from Bangladesh and Bhutan (Table 8.3), the country is on course of achieving major goals for the SGD, especially 6. The country significant policy changes have seen improvement in the sanitation sector. For instance, rural household access to toilet facilities increased from 51% in 2015–2016 to 100% in 2019–2020 (Government of India, 2021).

Only three countries achieved a green status, indicating that they are on truck or maintaining the SDG goal. As evident in Table 8.3, Sri Lanka, Nepal, and Maldives attained this level of success in achieving the target for SGD 6. Maldives's success can be attributable to the firm commitment of the government to developing the water and sanitation sector for the country. As evident, by the end of 2019, the population with access to piped water and sewerage reached 68% and 80%, respectively (National Water and Sewerage Strategic Plan, 2020). The government made a commitment to continue to provide access to safe water and adequate sewerage services in all inhabited islands by the end of 2023. Another factor is the formulation of the National Water and Sewerage Strategic Plan under the Water and Sewerage Act, to guide the sector and ensure that water and sanitation will be improved by 2025. Finally, the government made a financial commitment to support the implementation of this strategy and to cooperate with the international community for additional financial resources to ensure sustainable implementation of the strategy.

Sri Lanka made significant progress on the water and sanitation indicator of the SDG 6. As indicated in Table 8.3, the country obtained green status for the sanitation target. Available values show that the country increased access to improved drinking water and sanitation to 95% and 96% of the population, respectively. Additionally, the country completed about 18,000 individual's toilets and 8000 more under construction as of April 2021. The country also provided 30 schools with improved sanitation facilities and conducted 627 hygiene awareness programs for 106,863 beneficiaries.[4] The success of the country is primarily due to collaborative approach adopted with local institutions and the international partners such the World Bank to ensure sustainability of these projects and pro-

[4] https://www.worldbank.org/en/results/2020/06/23/sri-lanka-building-a-healthy-nation

grams in the sanitation sector. Another point to note that the overall development of the country will be limited by the pandemic and this will affect the progress to achieve good clean sanitation facilities and for people to practice good hygiene behaviors at all times.

8.7 Policy Conclusion

Although most of the countries selected for the study are making progress and developing policies to achieve the targets for the SGD 6 and other goals, there are significant barriers for these countries. Aside financial challenges, data availability is a major barrier for the countries. It is certainly almost impossible to obtain accurate date on key indicators. The difficulties in data collection are due to lack of technical capacity, inadequate resources, and insecure environment. Countries must coordinate with different stakeholders and international institutions on how to develop protocols to collect accurate date for the SGD targets. This will support the idea of monitoring and reporting on many other fronts including data availability. In addition, the need to set aside baseline for the national targets and indicators, which require professional technical assistance with increased funding, will be useful for the countries. Apart from coordination and monitoring, there is the need to create awareness on the indicators at different levels of government that is national, urban, and rural areas. This will help the government to gain support from different stakeholders. This is an effective strategy, as it will ensure local people to adopt any policy intervention to improve the sanitation in the countries. It is also relevant to explore different communications tool and educational materials targeting local ways of giving information to the communities on the benefits of risks unimproved sanitation. The lessons learned report from other countries such as Maldives and Nepal could be relevant for other countries in Asia.

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