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Sustainable Development Goal – 6 (clean water and sanitation) Status and Challenges in Nepal

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ABSTRACT

The paper explores access to clean water, proper sanitation and hygiene scenario, and major challenges in the context of Nepal through a review of literature and observation. Clean water and sanitation also fall under Sustainable Development Goal (SDG)- 6. Despite improvements in the past few decades, 3.8 million population has no access to basic water services, and more than 10 million population is still deprived of improved sanitation facilities in Nepal. Poor socio-economic conditions and lack of education have the biggest impact on the current water, sanitation, and hygiene (WASH) scenario across the country. At the same time, the poor functionality status of existing water supply systems, and the impacts of climate-induced disasters such as floods and landslides cannot be underestimated in the light of water, and sanitation.

Keywords: challenge, water, sanitation, SDG-6, WASH

Introduction

Drinking water, Sanitation, and Hygiene are basic amenities essential to sustain humanity. However, a large population is deprived of this basic need all around the world, especially in developing and underdeveloped countries. According to Unicef (2017), around 663 million population in the world have no access to improved drinking water facilities, and 2.4

billion population still has no improved sanitation facilities. Like many developing countries around the world, access to clean water and sanitation is a major issue of concern in Nepal. Unicef has reported that around 10.8 million people in Nepal are deprived of improved sanitation facilities and around 3.5 million people do not have access to basic water services.

Compared to the statistics of 1990, access to water sources now has increased from 49% to 95% of households. Also, 62% of households now have improved sanitation facilities compared to 6% in 1990. However, the functionality of these water sources remains questionable as it was revealed that 71% of them are E. Coli bacteria contaminated. What's more staggering is that 91% of the water sources available to the poorest 20% population is E. Coli contaminated (*Water and Sanitation (WASH) (UNICEF Nepal*, 2018).

Lack of safe drinking water not only affects health but also affects the economic status of the underprivileged and poor. Due to illness from water-borne diseases, low-income and poor people have no choice but to spend a significant amount of their income on hospitals and health care. Its impact can be seen in their livelihoods (Reddy & Behera, 2006).

United Nations (UN) introduced "Ensure access to clean water and sanitation for all" as Sustainable Development Goal (SDG)-6 under its 2030 Agenda for Sustainable Development. Nepal has endorsed it. Under SDG-6, the UN has explained, "Clean water is a basic human need, and easily accessible to all as there is sufficient fresh water on the planet to achieve this. However, due to poor infrastructure, investment, and

planning, every year millions of people — most of them children — die from diseases associated with inadequate water supply, sanitation, and hygiene." To achieve its Water, Sanitation, and Hygiene (WASH) objective, the UN has defined 8 Targets and 11 indicators under SDG-6 (*Goal 6: Clean Water and Sanitation - SDG Tracker*, 2018).

Nepal has set its Sustainable Development Goals (SDGs) target for 2030. It aims for basic water supply coverage of 99%, piped water supply coverage of 90%, and improved sanitation facilities for 95% of households around the country (National Planning Commission, 2017). Despite some improvements in the past few decades, there are still more challenges ahead. Hence, a need for reformation at the policy level and implementation strategy is evident.

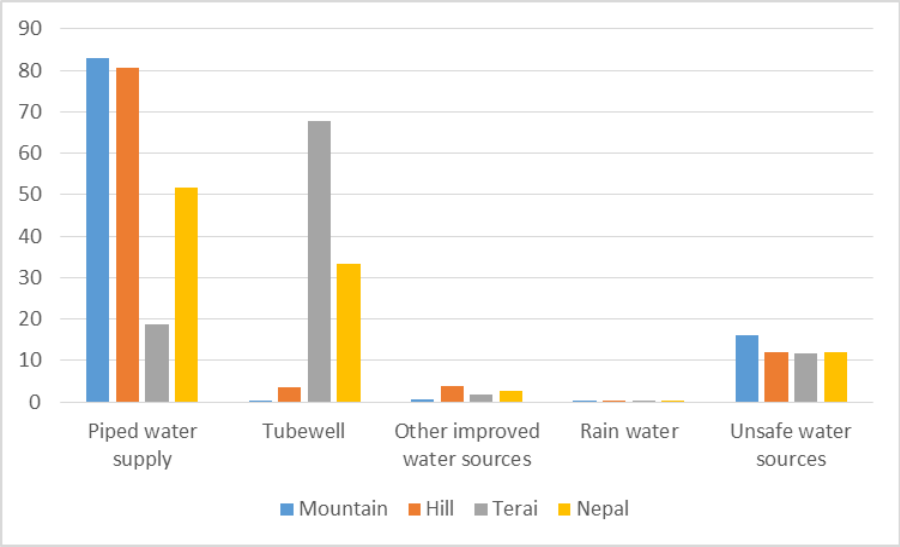
Methodology

This paper is based on several published literature and statistics concerning the Water, Sanitation, and Hygiene (WASH) status of Nepal. The data used to highlight the geographical and provincial disparity in the WASH sector are mostly taken from the official report of the Department of Water Supply and Sewerage (DWSS), Government of Nepal. Other sources include WHO and UNICEF official websites, and peer-reviewed and validated literature of recent decades. Literature of Nepalese, as well as international publications, are taken into consideration, analyzed, and extrapolated. The observation is also the source for analysis.

Status of Drinking Water in Nepal

There are various sources of drinking water in Nepal, and it varies according to geographical regions. Nepal is categorized into three geographical regions- mountainous (high hill), hill, and Terai (plain land). Figure 1 gives a comparative outlook on the situation of different water sources available to the households of three geographical regions of Nepal. Most households in mountainous and hilly areas depend on piped water supply whereas few in Terai are piped water dependent. According to the Department of Water Supply and Sewerage Management (DWSSM), 82.88 % of the households in the Mountain region, 80.50% of the households in the Hill region, and 18.62% of the households in the Terai region have access to a piped water supply. In Terai, most of the households, which is 67.83%, are using tube well as their main drinking water source. There is a negligible statistic on the usage of other improved water sources as well as rainwater harvest in the case of all three geographical regions. Still, there is a significant proportion of households in all three regions that are deprived of safe water sources. 16.20% of the households in the Mountain region, 11.95% in the Hill region, and 11.82% in the Terai region are using unsafe drinking water sources. Overall, 51.69% of the households in Nepal have access to piped water supply, 33.38% have access to tube well water, and 12.12% are using unsafe water sources.

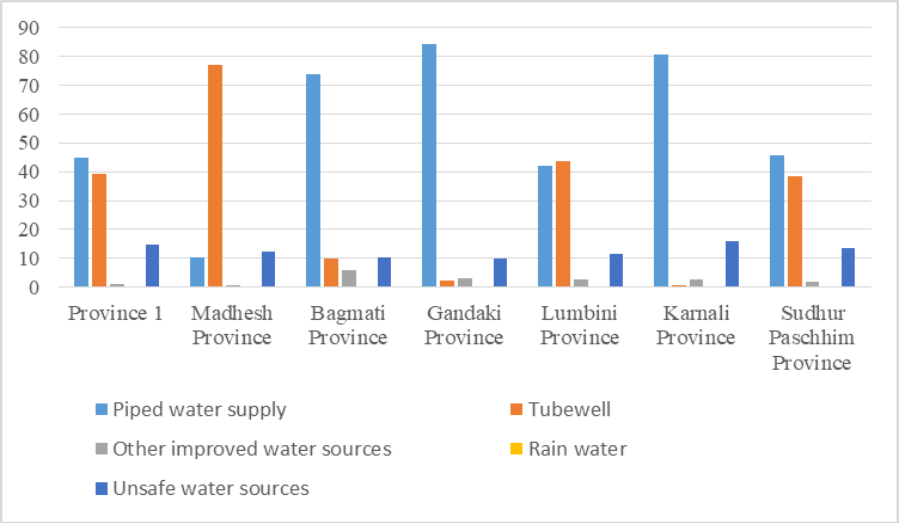
Figure 1: Percentage of Households (HHs) using different water supply sources in three geographical regions of Nepal



Source: Department of Water Supply and Sewerage Management, 2019

Provincial statistics reveal that Province 1, Lumbini Province, and Sudhur Paschhim Province have the majority of households using piped water sources and tube wells for daily water consumption. Similarly, households in Gandaki Province and Karnali Province are mostly piped water dependent whereas, a water source for Madhesh Province (plain region) households is predominantly tube wells. There is no considerable discrepancy in other water sources' consumption in relation to different Provinces. Province 6 has the highest percentage of households using unsafe water sources i.e 15.82% whereas Province 4 has the lowest as it is 10.08%.

Figure 2: Percentage of Households (HHs) using different water supply sources in 7 Provinces of Nepal



Source: Department of Water Supply and Sewerage Management, 2019

Functionality of existing Water Supply Systems (WSS)

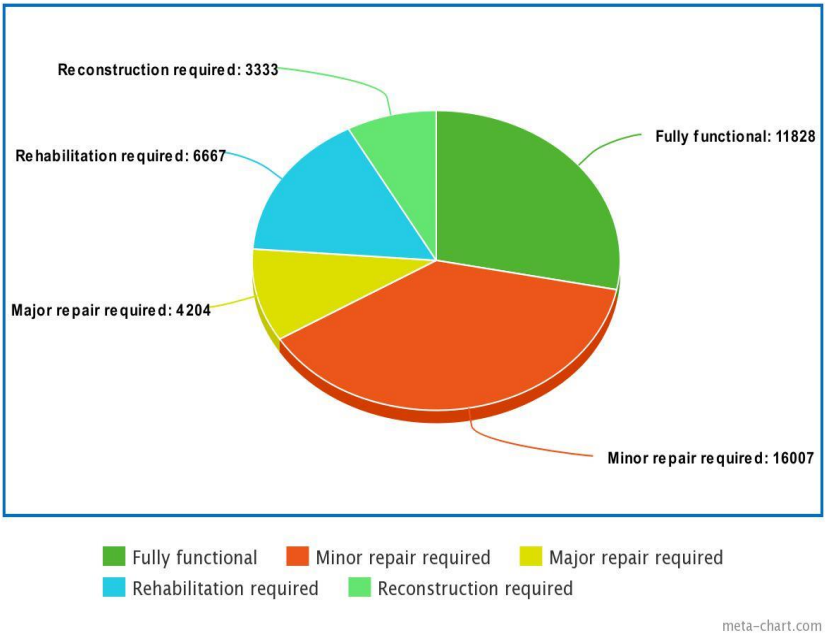
Oxford dictionary defines functionality as the quality of being suited to serve a purpose well. Based on the Drinking water and Sanitation status report, published by the Department of Water Supply and Sewerage Management in 2075 B.S., the functionality status of existing water supply systems (WSS) in Nepal has been classified into five categories as follows:

- Fully functional: This refers to the WSS that has no issues regarding the functional status.

- Requiring minor repair: This refers to the WSS which are not fully functioning according to the design but a minor repair of some sort if sufficient.
- Requiring major repair: This refers to the WSS that needs a considerable amount of money to repair and/or requires high-level technical assistance and/or needs replacement of parts that are unavailable locally.
- Requiring rehabilitation: This refers to the WSS that needs source replacement because of source drying and/or needs an increase in coverage area and/or needs retransformation because the system has become too old.
- Reconstruction required: This refers to the WSS that needs to be completely rebuilt.

According to the report, out of 42,039 Water Supply Systems around the country, 11,828 are fully functional, 16,007 require minor repair, 4,204 require major repair, 6,667 require total rehabilitation and 3,333 require reconstruction. This means only 28.14% of the water supply systems are functioning well. Lack of regular maintenance, lack of enough manpower when required, lack of enough budget for regular repair and maintenance, lack of enough motivation in terms of public service, and drying of natural water resources are the main cause of existing functionality status (Department of Water Supply and Sewerage Management, 2019).

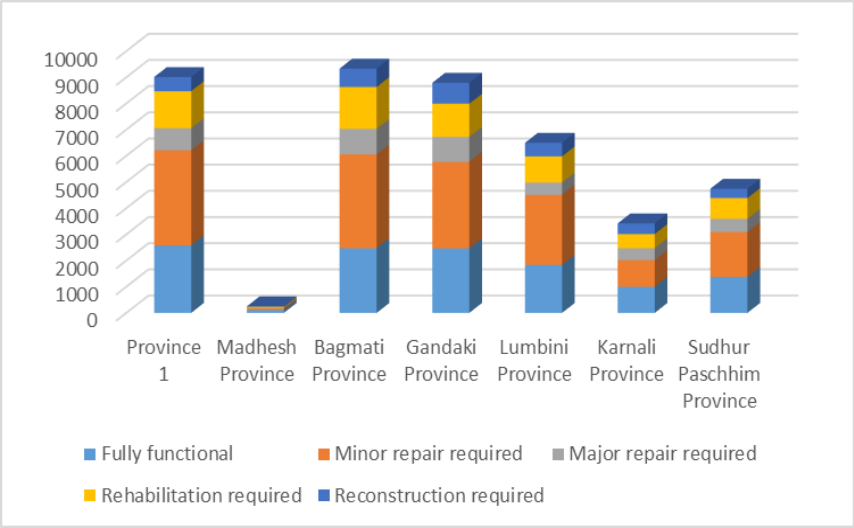
Figure 3: Functionality status of existing water supply systems in Nepal



Source: Department of Water Supply and Sewerage Management(DWSSM), 2019

Provincial data shows that a large number of water supply systems in each province require minor repairs of some sort. Also, a considerable number require rehabilitation, reconstruction, or major repair.

Figure 4: Functionality status of existing water supply systems in 7 Provinces



Source: Department of Water Supply and Sewerage Management, 2019

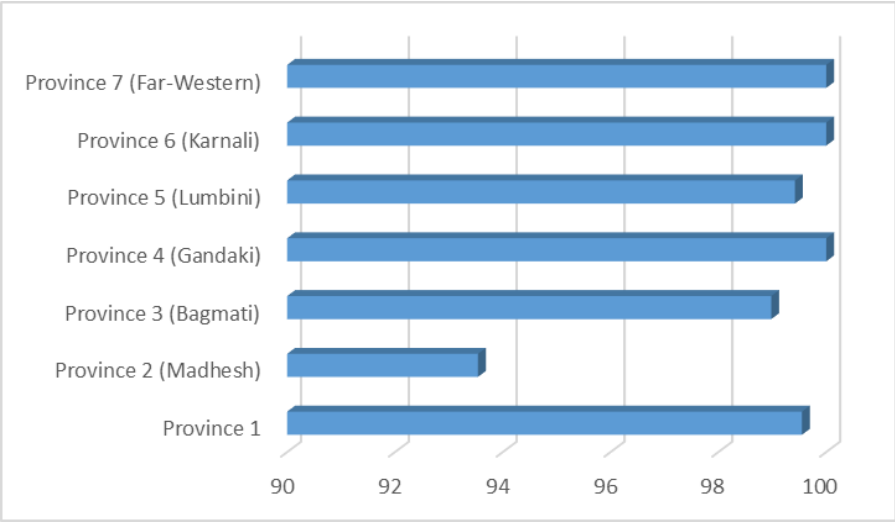
Status of Sanitation

Sanitation is a comprehensive terminology. It includes human excreta control, solid waste and wastewater management, and pest and vector control (Onyango, 2008). A sanitation facility refers to an excreta disposal facility, typically a toilet or latrine (Babu & Gajanan, 2022). Sanitation is an important socio-economic index. Proper sanitation facilities are a necessary precondition for hygiene which contributes to containing the spread of water-borne diseases (Reddy & Snehalatha, 2011).

Figure 5 shows Province wise sanitation status of Nepal as it shows that 99.55% of households in Province 1, 93.54% in Madhesh Province, 98.98% in Bagmati Province, 100% in Gandaki Province, 99.42 in

Lumbini Province, 100% in Karnali Province, and 100% in Sudhur Paschhim Province have access to toilet facilities. Although Madhesh Province is a little behind in terms of toilet accessibility, almost all households in other provinces have access to toilet facilities.

Figure 5: Percentage of Households (HHs) with Toilet Facilities

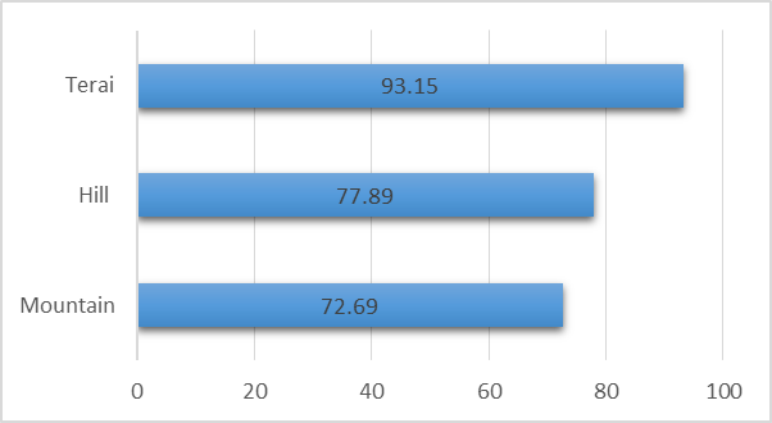


Source: Department of Water Supply and Sewerage Management, 2019

In the case of institutional sanitation status, adequate data is not available. However, data on toilet facilities in public schools shows that among 29,133 schools, only 23,784 schools have toilet facilities. This accounts for 81.64% of schools. Hence, 18.36% of public schools are still deprived of basic toilet facilities. Figure 6 shows the percentage of public schools with toilet facilities in three geographical regions of Nepal. The status of public

school toilet facilities is better in the Terai region compared to Mountain and Hill regions.

Figure 6: Percentage of Public Schools with Toilet Facilities



Source: Department of Water Supply and Sewerage Management, 2019

Although there is no data on public toilet facilities, it has been observed that the status of these toilets is unsatisfactory in most cases. The main reasons behind this are the unavailability of enough water facilities, lack of enough attention towards cleanliness, etc (Department of Water Supply and Sewerage Management, 2019).

Challenges

Inadequate safe drinking water supply, poor sanitation status and living conditions have been identified as major challenges in the context of Nepal. Several factors such as lack of education and poor socio-economic status also hamper proper sanitation practices. This has severely affected the health of Nepalese in a broader context. An estimated yearly minimum

death of 30,000 and morbidity of 3.3 episodes per child are estimated to be a result of diarrheal diseases (Pokhrel & Viraraghavan, 2004).

Another challenge is the uneven accessibility of WASH facilities across ecological regions. The geographical discrepancy has led to disadvantaged households in Far Western and Mountain regions in terms of improved water and sanitation accessibility (Wang et al., 2019).

The impacts of climate change on water supply and public health cannot be undermined. Heavy rainfall has accelerated the frequency of floods in Terai, excess runoff and landslides in Hilly and Mountain regions. On the opposite side of the spectrum, drought and scarcity of water due to source drying are not uncommon. Low precipitation and temperature rise in the dry season is causing a shift in snow line which in turn has affected the water balance and total water availability (Chaulagain, 2009). Also, climate-induced disasters such as floods and landslides have a big impact on the functionality of WASH infrastructures like pipelines, intake structures, reservoirs, and sanitation facilities (Oxfam, 2008).

The functionality of existing water supply systems is a major concern as it is apparent from Figure 4. Poor infrastructures result in unreliable, insufficient, and unsafe water supply. This directly affects the sanitation, cleanliness and hygiene behavior of people (Budhathoki, 2019). It is apparent from Figures 3 and 4 that the majority of water supply systems throughout all provinces in Nepal suffer some level of functionality issues.

Conclusion and Implication

Challenges regarding Water, Sanitation and Hygiene are multivariate and complex in the context of Nepal. Poor socio-economic conditions and lack of education have perhaps the biggest impact on the current WASH scenario. The discrepancy in WASH status across developmental and ecological regions also suggests an uneven infrastructural development in water and sanitation. An effective budget distribution, which takes into account the geographical and socio-economic factors across different provinces, is deemed necessary to build infrastructures and educate people. Also, to counteract the threats of climate-induced disasters in the water sector, a wide knowledge regarding afforestation, groundwater recharge, rainwater harvesting, effective irrigation practices, and land use is necessary. Climate-resilient and sustainable infrastructures should be built to tackle functionality issues that result from floods and landslides.

On the governmental and policy level, a major portion of spending for the maintenance, rehabilitation, and monitoring of water supply systems is less given priority. The periodic monitoring of water quality is extremely important to prevent the epidemic of water-borne diseases. Likewise, proper waste disposal practices, a sustainable sewage system, and awareness of sanitation and hygiene are critical in controlling the outbreak of water-borne diseases. In order to achieve its SDG-6 target, implementing sustainable WASH policies and building infrastructures should be given more attention.

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