BMZ/VCA/WHH/SABAL Nepal, Saptari

STUDY REPORT
of Baseline survey on

Strengthening Municipal Wide WASH Governance for Social Change (SMWGSC) in

3 Municipalities of Siraha District, Nepal

For

Prepared by

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Document	**Report of Baseline survey on Strengthening Municipal Wide WASH Governance for Social Change (SMWGSC) in 3 Municipalities of Siraha District, Nepal**
Report to:	welt hunger hilfe / SABAL NEPAL ESTD. 2063
Prepared by	Centre for Sustainable Development Studies Pvt. Ltd. (Consultancy for Change)
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Date	**December 2019**

Acknowledgements

Strengthening Municipal-wide WASH Governance for Social Change in Siraha District is a 3-years project (2019-2021, being implemented by SABAL Nepal under the support of BMZ/VCA/WHH. It is designed to support the three municipalities (Siraha, Kalyanpur, and Karjhana) of Siraha district to achieve safe drinking water, total sanitation, nutrition, and livelihood by strengthening WASH governance at the municipality level. The **overall objective (impact)** of this project is to improve the health and nutritional status through strengthened WASH governance and the provision of basic water, sanitation, and hygiene (WASH) services; gender equality and empowerment of disadvantaged groups in Siraha. This project has 4 Outcomes with 19 indicators to measure the achievements over the project period.

This baseline survey has been carried out for context analysis and feed the baseline information to measure the achievements of the project. WHH and SABAL Nepal entrusted CSDS Pvt. Ltd. and provided an opportunity to carry out this census level HHs survey with more than 100 questions covering 34,896 households with 192,412 population.

Only because of the cumulative effort of multi-party involvements, it was possible to accomplish this big assignment. In this achievement, we would like to acknowledge WHH and team member Giriraj Khatri, WASH/DRRR Expert; Padam Lamsal, Project Coordinator and Maheshwor Rijal, MEAL Officer; and SABAL Nepal including Team member, Deepak Jha, Executive Director; Bibhushan Karki, Project Coordinator and his team for their trust and support. We share special thanks to Mr. Will Tillett for his constructive feedback on survey tools.

We would like thanks to the Mayors and Deputy Mayors of Siraha, Kalyanpur, and Karjanaha Municipality for their coordination and support. Thank you to all participants of FGD and KII.

We also would like to acknowledge the study team member: Sangita Khadka, WASH Governance, and Menstrual Hygiene Expert; Dwarika Prasad Ghimire, WASH Expert; Dik Narayan Chaudary, Field Coordinator, Bhupesh Kumar Sah, Prakash Subedi, and Suman Chaudhary, Field Supervisor of the study for Siraha, Kalyanpur and Karjanaha respectively for their tireless support. Thank you to all enumerators, the study was not possible without their tireless support.

We hope, time will generate such an opportunity again to work together.

Thank you

……

Prakash Rai

Team Leader and the Chairperson

Centre for Sustainable Development Studies (CSDS) Pvt. Ltd.

Acronyms

BMZ	Federal Ministry for Economic Cooperation and Development
CSDS	Centre for Sustainable Development Studies
FCHVs	Female Community Health Volunteers
FGD	Focused Group Discussion
ICS	Improved Cooking Stove
KAP	Knowledge, Attitude, and Practice
KII	Key Informant Interview
TOR	Terms of Reference
VCA	Vulnerability and Capacity Assessment
WASH	Water, Sanitation, and Hygiene
WHH	Welt Hunger Hilfe

Study Team

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CHAPTER: I
INTRODUCTION

1.1 Background

For the decade-long political transition, Nepali development in multiple aspects including WASH has been legged behind. The political Restructuring process of Nepal has established a federal system with three tiers of governments e.g. Federal, Provincial, and Local. International commitments including SDG and WASH are in high priority of the government of Nepal. Now the federal and the provincial governments of Nepal are in the role of policy formulation for WASH sector development e.g. Nepal Water Supply, Sanitation and Hygiene Sector Development Plan (2016 – 2030). This is the document that leads to implementing the WASH under SDG in Nepal. The jurisdiction defined by the Constitution of Nepal has included the WASH in the portfolio of local government. WASH Sector Development Plan is introduced as the guideline, however, local governments have to lack the capacity and resources to run the WASH activities at the local level.

"Strengthening Municipal wide WASH governance for social change in Siraha district" is a 3-years project (2019-2021, supported by BMZ/VCA/WHH and implemented by SABAL Nepal, which supports the three municipalities (Siraha, Kalyanpur, and Karjhana) of Siraha district to achieve safe drinking water, total sanitation, nutrition, and livelihood by strengthening WASH governance at the municipal level. This baseline survey is carried out to feed the baseline information to measure the achievements of the project. In this study, a census level HHs survey with more than 100 indicators is carried in 34,896 households with a 192,412 population. Along with the HH Survey, FGD and KII are also used as the information collection tools to develop this study report.

1.2 Objectives of the study

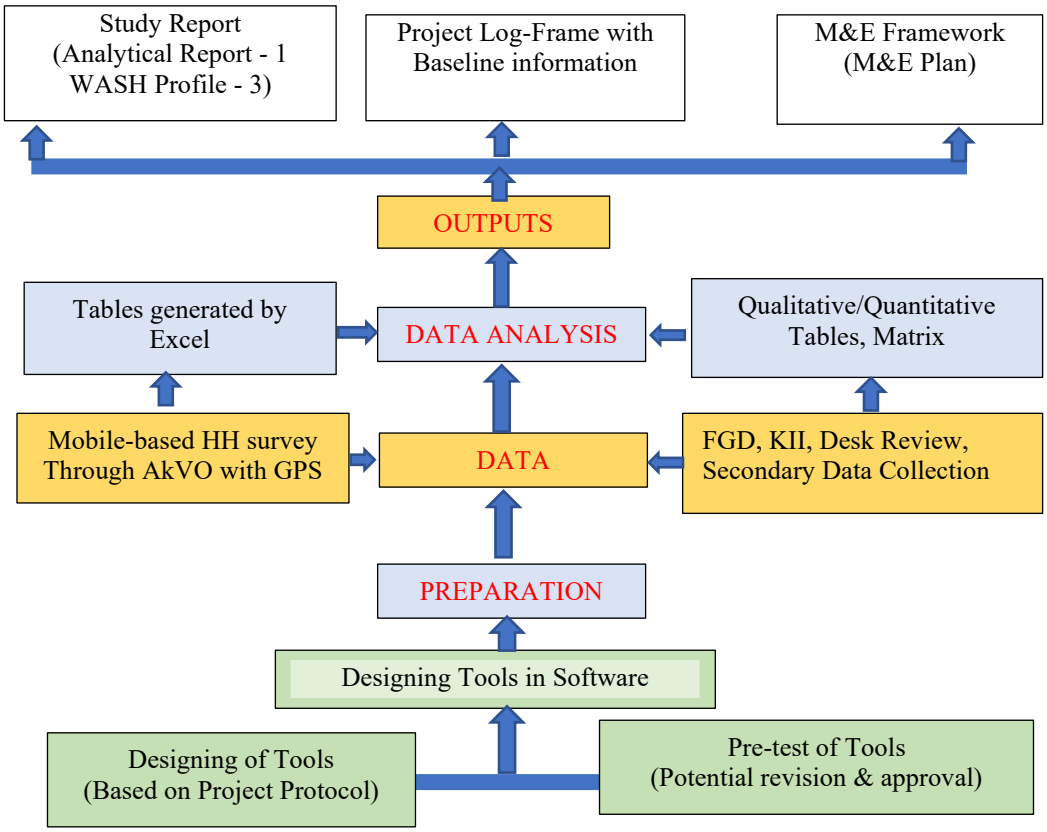
The overall objective of this baseline study was to undertake the baseline survey (HHs survey) including the assessment of process, progress, monitoring and reporting tools and methods for output, outcome and impact monitoring.
Specific activities carried out under this assignment were as follows:

- Design a *data collection tools and analysis framework for baseline survey compatible* to the project log frame (project indicator protocol) developed by WHH/SABAL Nepal including tools and systems used for the study including Knowledge, Attitude, and Practice (KAP).
- Compile baseline in the project level data analysis framework developed in the project document.
- Undertake baseline HHs survey (Census) with scientific back up by GPS tracking and digital survey mechanism.
- Develop process, progress monitoring and reporting tools and methods for impact, outcome and output monitoring based on indicator protocol, log-frame and M&E plan for the project
- Develop report covering survey, findings, result-based log-frame, and M&E plan.

1.3 Methodology

This study has been conducted through multiple techniques and tools which was comprised as the methodology. Desk review; consultations with partner and WHH staff; household survey at Census level, key informant interviews (KII) with the Mayor and Deputy Mayor; and focused group discussions with Ward Committee Authorities and WASH stakeholders were the key tools used to collect information. During the study Knowledge, and Practice (AKAP) survey. Overall methodology of the study is summarized in Fig. 1 below.

Fig 1: Overall Framework of Baseline Study



1.4 Questionnaire for HH Survey Designed

During the inception phase, team has developed questionnaire for household level survey with the instant feedback of SABAL team. The draft developed by study team was forwarded to WHH via SABAL for creative feedback. Based on the suggestions, study team and SABAL jointly sat on and finalized the questionnaire for Household Level Survey (Annex 2.a). Questionnaire was arranged into 15 section and designed into both English and Nepali language so that enumerator could understand the exact meaning and objective of the questions to be asked. It had maintained the balance in questions related to WASH and KAP.

The finalized questionnaire was designed in app-based software https://welthungerhilfe.akvoflow.org/admin/ to run into mobile so that enumerator can collect data through mobile.

In the same time, checklist for Focused Group Discussion (FGD) and Key Informant Interview (KII) also designed and finalized consulting with SABAL Nepal and WHH (Annex 2.b).

1.5 Enumerator and Data Collection

There are 45 wards all together in three municipality where the HH survey was conducted. Before starting enumeration, study team and SABAL Nepal defined qualifications for the enumerator and requested the Ward Chairperson to recommend at least 3 enumerators based on area and ward population at least. The selected enumerators were oriented about the significance of survey and questionnaire, techniques for using tablet based questionnaire and sending the data on the system on 27th June 2019 at Mirchaiya and pre-testing was ensured before they are deployed in the field.. Based on their testing survey, enumerators were reoriented at Siraha, Karjanaha (29th June 2019), and Kalyanpur (30th 2019) and provided necessary feedback to ensure the data quality.

Enumerator were mobilized to collect HHs data with tablet based (AKVO Flow) Questionnaire and collected data from 34,896 households with 192,412 population. It was a census survey with 116 WASH related questions including family roster.

As the verification tools, study team carried out 15 FGDs with the Ward Committee authorities (Please see Annex 2.c: for Criteria for ward selection), WASH stakeholders at ward level and 8 KII with the Mayor, Deputy Mayor, and WASH Focal Persons. This was very helpful to validate the HHs Survey data.

1.6 Data Management

Data collected from HHs survey is managed in excel. During the data management, tables were calculated using Pivot Table and diagrams were also designed in excel. To calculate some indicators used in the report were calculated based Joint Monitoring Programme (JMP) Ladder e.g. the houses having private tap were categorized as Safely Managed (improved); HHs getting water from were categorized as Basic (improved) and HHs with public tap and Protected spring were categorized as limited (improved).

1.7 Limitations

With continuous and rigorous effort, survey was carried out and report was generated. It was a census survey in 34,896 houses with family roster. It was a larger size of survey from the private sector. While survey was started on 30th June 2019, Monsoon season was started in Nepal and Tarai region was engulfed into the heavy rain and flood. As the consequences, survey was abrupted for three weeks. After the flood recovery, enumerators were unable to conduct survey efficiently because of disrupted roads/mobile connection and continuous rainfall. Furthermore, frequent drop out of enumerator was another reason that delayed the survey. On the other hand, there are no established norms and systems like JMP in Nepal to manage WASH survey related to monitoring which can support to manage survey and arrange data.

CHAPTER: II

INTRODUCTION TO STUDY AREA

2.1 Geographical Location

Ecologically, Nepal is divided into three regions e.g. Mountain region with high altitude and steep landforms; hilly regions with medium types of hill, and Tarai Region with plain and flat landforms. Siraha district where the study area, Siraha, Kalyanpur, and Karjanaha municipalities are located, is a district of Tarai region. Geographically, Siraha district is referenced from 26º32'59" North to 26º56'7" Northern Latitude and from 86º7'51" East to 86º16'17" Eastern Longitude. In the middle of the district, the East-West Highway passes through which was the key line to divide the development process. We can observe that urbanization process is rapid along the highway in compare to the southern part.

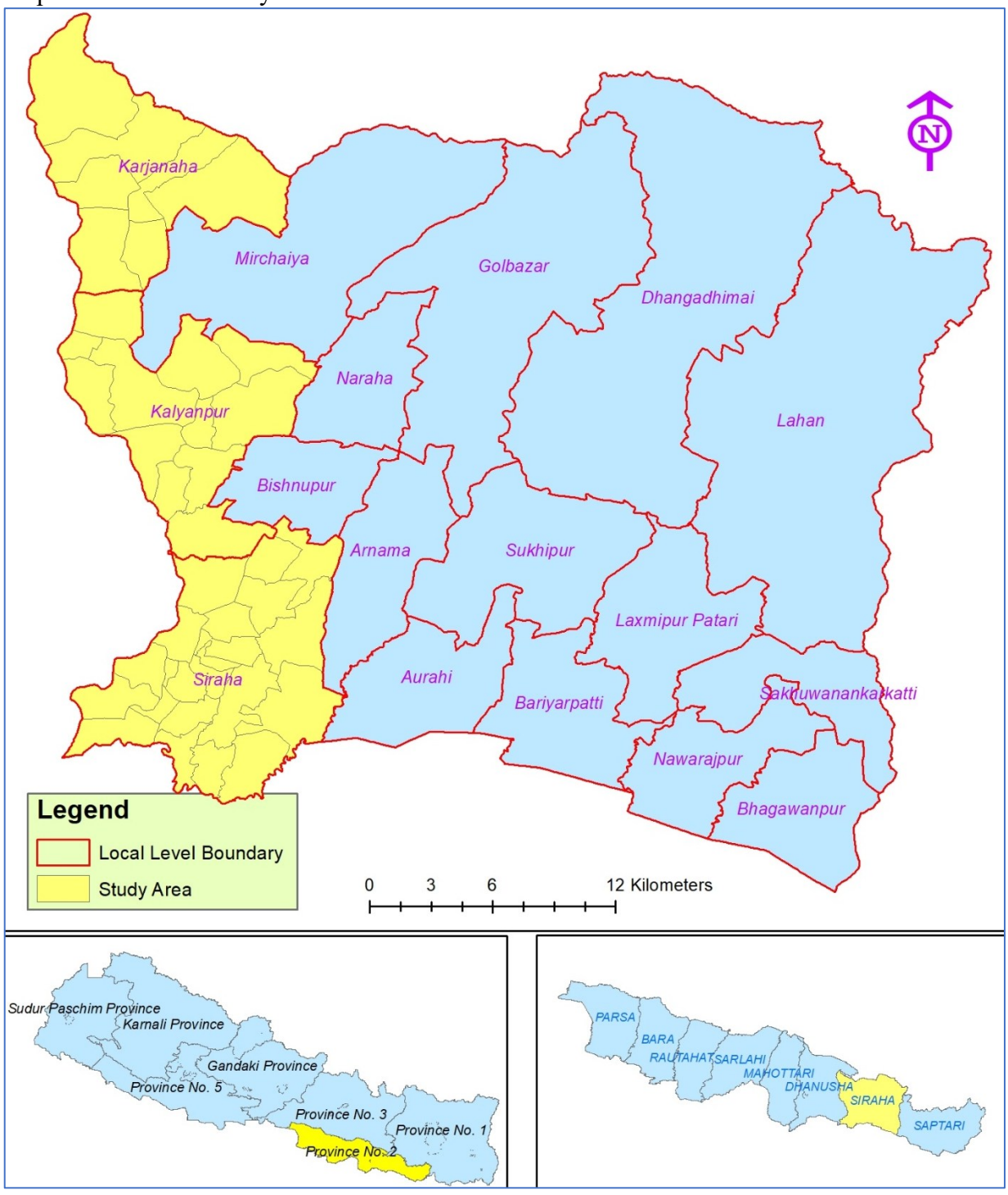
2.2 Political Location

There are 17 local levels in total. Out of 17, eight are municipalities and nine are rural municipalities. For this study, Kalyanpur, Karjanaha, and Siraha municipalities were selected. Among these three, Siraha municipality, the headquarter city of the district, is locate in the south-west part of the district. Nepal-India border is in the southern part of the municipality. Aurahi and Arnama rural municipalities in the east, Bishnupur rural municipality and Kalyanpur municipality in the north are the adjoining local levels of the Siraha municipality. Kamala river and Dhanusha district are in west of this municipality.

Similarly, Kalyanpur, the other study area, is in the mid-western part of the district. Siraha municipality in the south, Naraha and Bishnupur rural municipalities in the east and Mirchaiya and Karjanaha municipalities in the north are neighbor local levels of Kalyanpur Municipality. Kamala reiver and Dhanusha district are the western boarder of Kalyanpur municipality.

Karjanaha, the other study area, is in the North-Western part of Siraha district. North part of this municipality has stretched up to Churiya range, the range of small hills also know as younger mountain in Nepal which lies between Tarai and Inner Tarai. Comparatively, it has more forest area than the other municipalities. This municipality is divided into two part in the mid-point by the East-West highway. Migrated people from the hill mostly are dwelling along the highway and a mixed type of community can be observed this area. Kalyapur municipality in the south, Mirchaiya municipality in the east is the adjoining local levels of Karjanaha municipality. There is Udaypur district in the north of Karjanaha and Kamala river and Dhanusha district in west.

Map 1: Location of Study Area



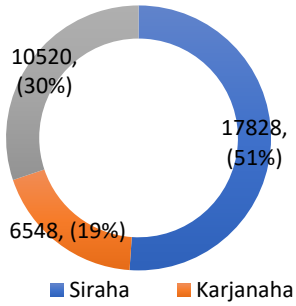
Source: Report of Commission for Local Level Restructuring 2017

2.3 Demographic Status

2.1.1 Households of the Study Area

The survey has covered 34,896 households which was 30,956 according to CBS 2011. Out of three municipalities, Sirah is highly populated with 17,828 HHs, which cover 51% of the covered HHs. Karjanaha has lowest HHs 6,548 (19%)

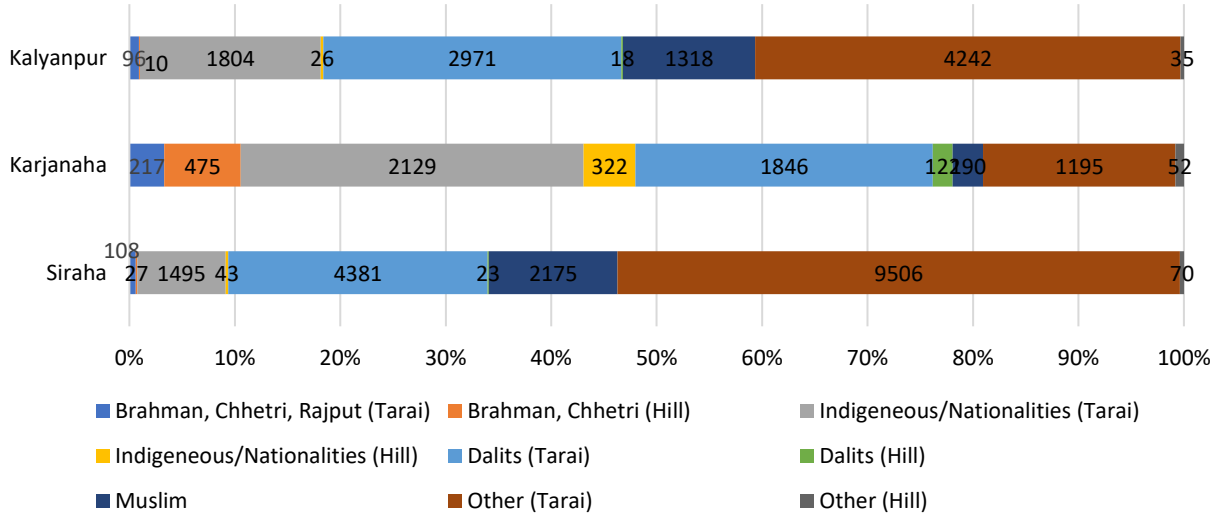
Fig 2.1: Households of the Study Area



2.1.2 HHs by Caste Ethnicity

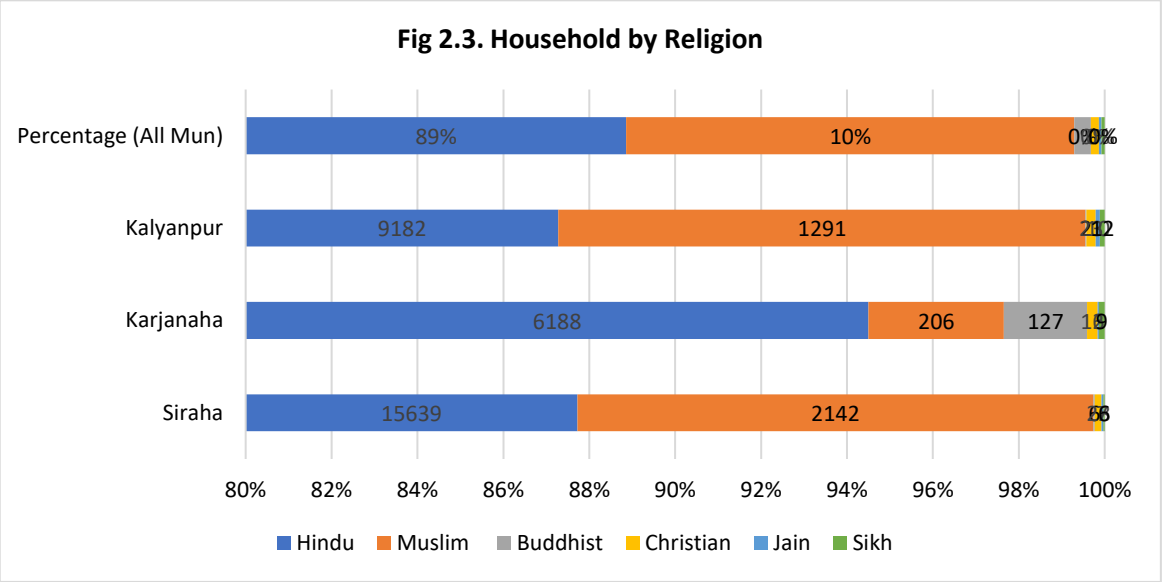
Caste/ethnic composition of the study area is another significant factor that can affect the findings of study. Based on government policy, respondents and family member were categorized into 9 groups which are the basic groups to implement the policy of social inclusion in Nepal. Based on these groups, Tarai Other Castes which includes Yadav, Teli, Kalwar, Sudhi, Kurmi, Kusbaha etc. has covered 53.3% in Siraha, 40.3% in Kalyanpur and 18.2% in Karjanaha. Similarly, Indigenous Nationalities (Tharu, Dhanuk, Jhagad, Kisan etc.) has shared 8.4% in Siraha, 32.5% in Karjanaha, and 17.1% in Kalyanpur Municipality. Out of three municipalities, Karjanaha Municipality is in the northern part of the district and migration from the hill has been notice high in compare to other (Please see in Fig 2.2, for more details please see annex 3.a Table 2).

Fig. 2.2: Households by Caste Ethnicity



2.1.3 HHs by Religion

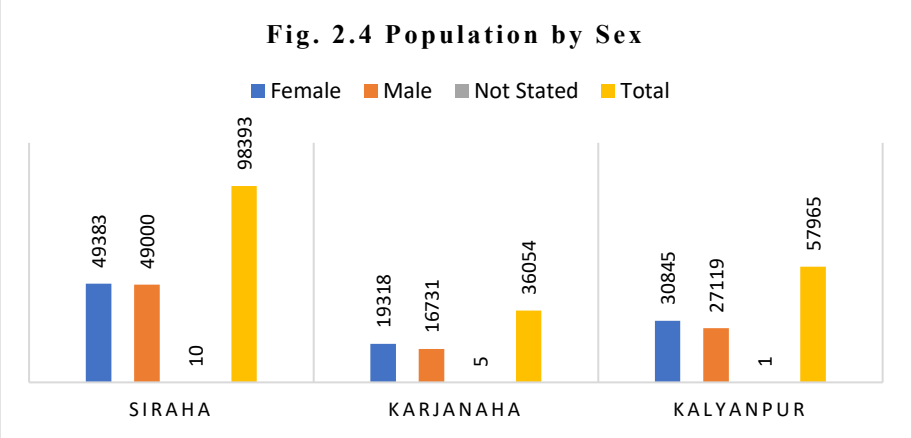
WASH is a part of social progress and development and such progress in the study area context directly depends on religious social norms and values. For this instance, religious composition of the study area is presented here. Households with Hindu comprise 89% in total where as Muslim 10% of total households.



There are very small number of households who practices religion other than Hindu and Muslim. Of which, the noticeable number (127 HHs) of Buddhist found in Karjanaha Municipality.

2.1.4 Population by Sex

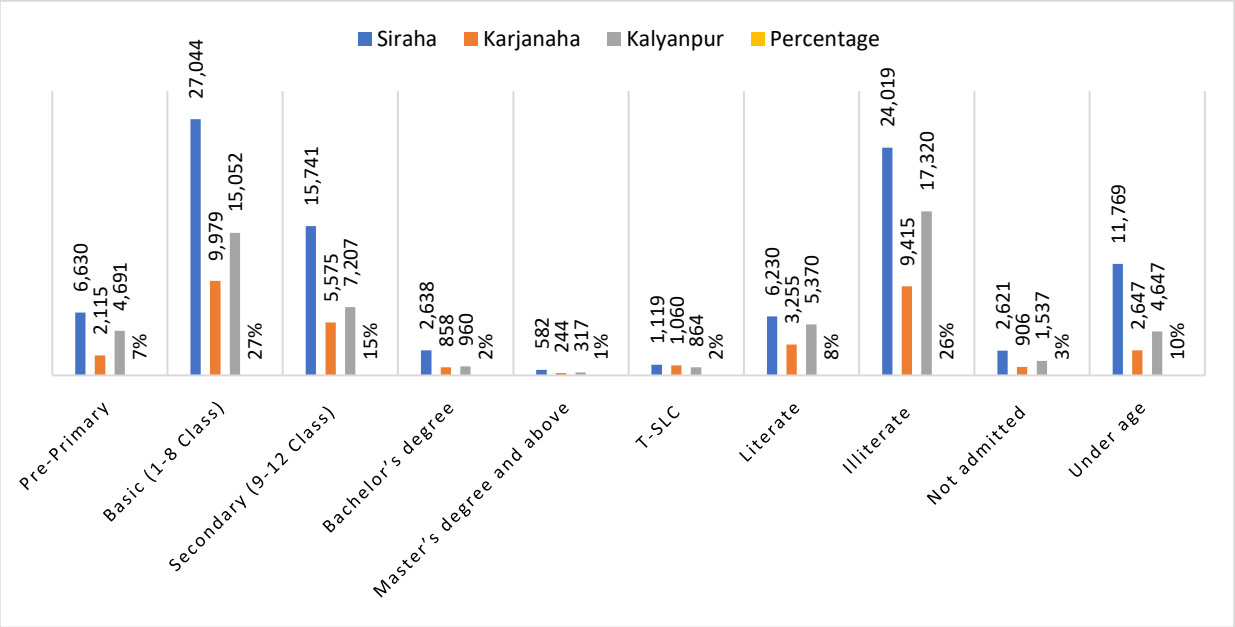
During the survey, 192,412 populations are counted in three municipalities. 51% percent of total population is recorded in Siraha Municipality. Out of total, 52% of population is shared by female and 48% is by male (Please see Fig 2.4).



2.1.5 Population by Education

Education is a significant indicator of development. Academic qualification of family member was a question during the HH Survey. Based on the answer of respondent, a huge share of population was found with low level of academic qualification e.g. Under age – 10%; Not admitted to schools 3%; Illiterate 26%; and literate 8% (47% in total) which needs immediate attention on WASH related activities and should be design and develop considering the understanding level of beneficiaries (see Fig. 2.5).

Fig. 2.5 Population by Education



2.2 Human Development Status

Human Development Index (HDI) is an indicator which illustrates the level of development. Nepal is a developing country with low Human Development Index (0.458) ranking 145th (Human Development Report, 2014) out of 187 countries in the world. Within the country, level of development is spread unequally across all ecological and development regions as well as districts. Among the ecological regions, the Tarai (0.521) has lower HDI in compare to the Central Hills, including the Kathmandu Valley, (0.612) (NHDR 2014). Among, Central Tarai districts Siraha has lower HDI (0.408) in compare adjoining districts Saptari (0.437) and Dhanusha (0.431). Similarly, Human Poverty Index of Siraha (42.6) is found higher than Saptari (38.3) and Dhanusha (41.7) districts (NHDR 2014).

CHAPTER: III
NATIONAL CONTEXT OF WASH

The Government of Nepal has made its considerable efforts to improve the water supply and expand coverage area. Similarly, The Ministry of Water Supply and Sanitation has prepared a long-term sectoral development plan (SDP) by identifying priorities areas for future interventions and number of thematic approaches with an aim to achieving WASH sector goal by 2030 align to SDG targets. Nepal has made rapid progress in sanitation coverage, heading toward ensuring basic sanitation for all and eliminating open defecation from the country to achieve Sustainable Development Goals. SDP is a guiding framework for planning, implementing, coordinating and monitoring all activities in the sector. The government has set target to provide basic WASH services to all population by 2020 and then improve services level (medium 50% and high 50%) by the end 2030. In addition, Nepal has set specific targets in Sustainable Development Goal (SDG) 6 for the year 2030 that includes basic water supply coverage to 99 percent households, piped water supply and improved sanitation to 90 percent of households along with elimination of open defecation (NPC, 2018). Analysis of existing WASH situation reveals the actual gap that needs to be gradually fulfilled by the government to achieve the desired goal.

According to Division of Water Supply and Sanitation (DWSS) Nepal, Coverage of basic sanitation facility is above 95 percent in all the provinces except in province 2. In this context, this base line report analyses the status of progress and existing situation of WASH in working clusters of WHH and SABAL Nepal in the Palika's of Siraha District of Province -2, of Nepal.

5.1 Legal Provisions

The Constitution of Nepal recognizes access to safe water and sanitation as a fundamental right (Article 35 (4), where citizen have been granted the right of access to safe water and sanitation; right to live in a healthy and clean environment; and provision of compensation for the victim of environmental pollution and degradation (Article 30). Constitution of Nepal has provisioned WASH activities as the jurisdiction of local government (Schedule 8). Local Governments Operation Act (LGOA) 2017 has mentioned the WASH as the roles and responsibilities of Local Government (Rules 11, (S)). As the international commitment, the Federal Government of Nepal has agreed to implement the Sustainable Development Goals (SDG) in which Water and Sanitation is defined as the goal 6 with 6 Target. As the implementing framework of SDG, Government of Nepal has formulated Nepal Water Supply, Sanitation and Hygiene Sector Development Plan (2016 – 2030) through Ministry of Water Supply and Sanitation. This sectoral development plan (SDP) is introduced as guiding framework for planning, implementing, coordinating and monitoring all activities in the WASH sector. Now, the local government can promulgate Acts and Policies as requirement for WASH sector development. Local Government can manage facilities to regulate the WASH service and can determine the tariff and tax against the services.

5.2 WASH in Sustainable Development Goals

The UN has formulated Sustainable Development Goals (SDGs), as a follow up to MDGs, with a proposed set of 17 goals and 169 targets relating to future development, which demonstrates

the scale and ambition of new international development agenda. Out of 17, Goal No. 6 aims a situation of Clean Water and Sanitation. This goal has 6 targets and 2 sub target as follows:

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity
6.5 By 2030, implement Integrated Water Resources Management (IWRM) at all levels, including through transboundary cooperation as appropriate
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
6.b Support and strengthen the participation of local communities in improving Water and Sanitation management

These targets have expected a universal and equitable access to water and sanitation to the people who dwell any part of glob and community. As commitment of the Government of Nepal, each level of governments have responsibility to achieve the target. Partnering in the responsibility of local level, developing partners are working in WASH sector. This study is carried out to measure the targets stablished by the local levels.

5.3 WASH in National Plans

The government of Nepal has committed to the goals of SDG and has developed formulated Nepal Water Supply, Sanitation and Hygiene Sector Development Plan (2016 – 2030) through Ministry of Water Supply and Sanitation as an implementing framework of SDG. This sectoral development plan (SDP) is introduced as guiding framework for planning, implementing, coordinating and monitoring all activities in the WASH sector. WASH is one of the significant functions and responsibility of local government and now, the Local Government can manage facilities to regulate the WASH service. Federal system is new to Nepal and local government authorities are busy in establishing institutional setup. As the consequences, institutional setup for WASH is still to be in functional.

In the facilitation of development partners, Community-Led Total Sanitation (CLTS) approach has been introduced to implement the WASH activities effectively at community level. CLTS is focused on igniting a change in sanitation behavior rather than constructing toilets. This is done

by a process of social awakening that is stimulated by facilitators from within or outside the community. This approach concentrates on the entire community rather than on individual behaviors. The first significant step of CLTS is to end open defecation as an entry point while changing sanitation behavior. It starts by enabling people to do their own sanitation profile through appraisal, observation and analysis of their practices of open defecation and the effects these have.

5.4 Total Sanitation Guidelines 2016

Ministry of Water Supply and Sanitation has enacted a guidelines for total sanitation 'Total Sanitation Guidelines 2016' with the aim of orient to achieve total sanitation for all and forever. It has provisioned 27 activities in seven sub-sectors to achieve total sanitation. It has provisioned 27 indicators in seven sub-sectors to measure the achievements of the development. It has also established criteria to declare area that achieved total sanitation. It has also proposed tools to measure the achievements with monitoring and evaluation mechanism. The study has been defined also considering the approach and provisions of Total Sanitation Guidelines 2016.

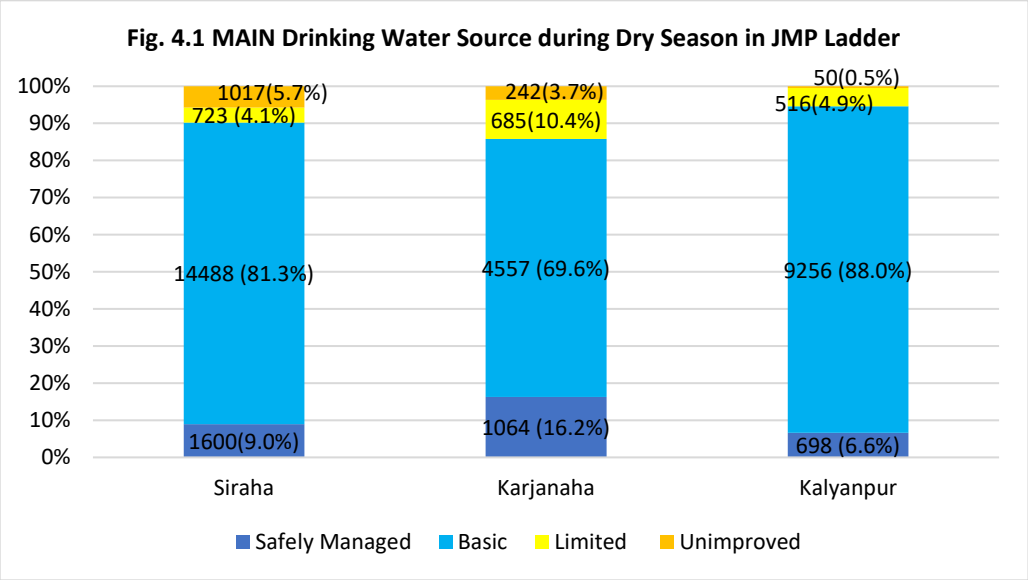
CHAPTER: IV
FINDINGS OF THE SURVEY

4.1 Access to Safe Water

Access to safe water has been inherent rights of the people but unfortunately the sources of water are drying out because of climate change, human negligence and natural disasters.. This study has been carried out from the tarai region of Nepal where the ground water is the major source of water. To measure the quality and accessibility of water, Join Monitoring Program (JMP), a universal monitoring system introduced and led by UNICEF and WHO, has developed 5 steps ladder. According to JMP ladder, there are five categories as follow:

A. **Safely Managed**: Drinking water from an improved water source which is located on premises, available when needed and free from faecal and priority chemical contamination
B. **Basic**: Drinking water from an improved source, provided collection time is not more than 30 minutes for a roundtrip including queuing
C. **Limited**: Drinking water from an improved source for which collection time exceeds 30 minutes for a roundtrip including queuing
D. **Unimproved:** Drinking water from an unprotected dug well or unprotected spring
E. **Surface Water:** Drinking water directly from a river, dam, lake, pond, stream, canal or irrigation canal

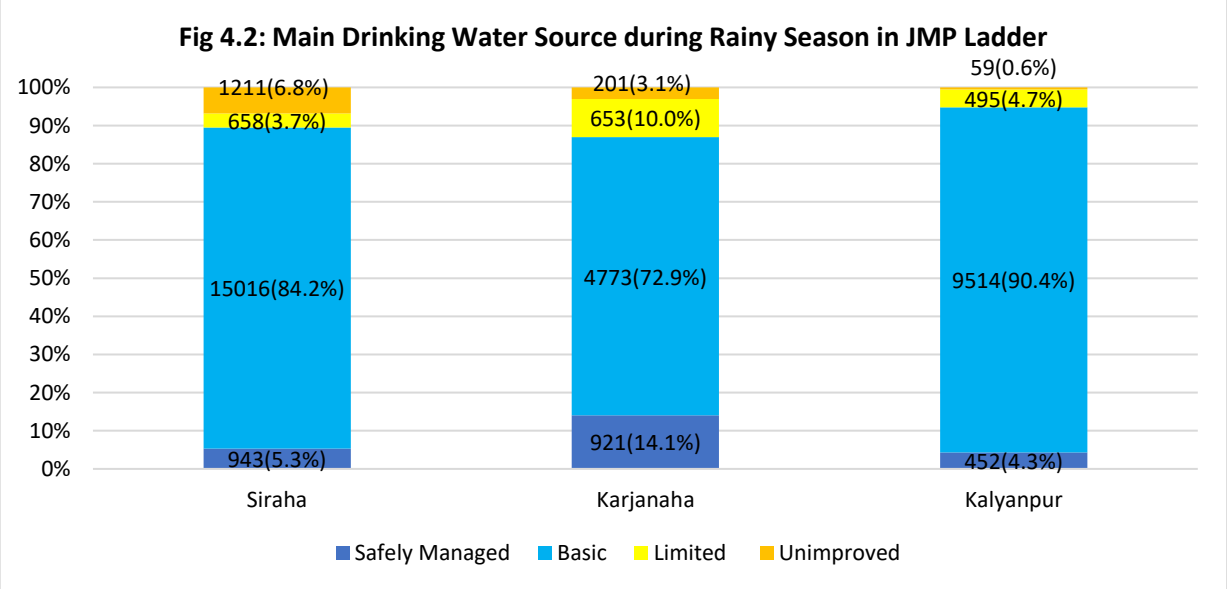
The data collected through survey has arranged based on the JMP ladder. This study has categorized the households having Private tap at the house (improved) as Safely Managed; Handpump (improved) as Basic; and Public tap (improved) and Protected spring (improved) as Limited. There is no house found using Surface Water.
The households categorized under Safely Manage, Basic and Limited were put into Improved domain and Open dug well (not improved), Other (not improved), Pond, stream, river, swamp (not improved) were in unimproved domain.
Based on the JMP Ladder, status of access to drinking water during the dry seasons found as follows:



During the dry season, 96.2 % of Households found using water from **Improved** source which includes **Safely Managed** (9.6%), Basic Source of water (81.1%), and Limited source of water (5.5%). Similarly, 3.7% of households are found using water from **Unimproved** source.

Ward no. 1 of Karjanaha Municipality is located at foothill of Chure Range, very dry area in Tarai. During the FGD it was reported that around 400 households do not have access of drinking water for 4 months in dry season.

Practice of using drinking water during the Rainy season in study area was found similar to the dry season. Data collected for the rainy season have been arranged in JMP Ladder with same process as for dry season(See Fig. 4.2).



Survey showed that 95.8 % of households are using water form **Improved** Source in the rainy season which included **Safely Managed** (6.6%), Basic (88.8 %), and Limited (0.4%) source of water. Only 4.3% of households were reported as having drinking water from Unimproved source during rainy season. Whereas the Total Sanitation Guidelines 2016 assumes that 100% of households will be using Basic level of drinking water in both season. In the southern part from

East-West highway, data showed that there was no more difference in access of water between dry and winter seasons.

Water Fetching Time and Needs of Water

> *Households from marginal community do not have private tube wells. They have to collect water form neighbor and take longer time.*
> - *FGD*

It was found that there is no more difference in the practice of having water during both dry and rainy seasons. It is mainly because of practice of using ground water in the Tarai region. Tubewell is widely practiced water system in the Tarai. Most of the people in Tarai use to install tubewell at their home premises. For this reason, water fetching time is recorded lesser in the Tarai than hill in Nepal. Consequently, 66% of households have reported having waterpoints within less than 10 minutes, 16.7 % households within 11-20 minutes, and 13.2% within 21-30 minute. Only 4.4% of households have to spent more than 30 minutes for fetching water (for more details please see table in Annex 3.2c).

More than 86% of households expressed their needs 100 and more liters of water per day. There were only 13.7% of households who reported their needs of water below 50 liters per day (For Details please see Annex 3.2.d).

Functionality of Water Point and Alternative Source of Water

Although the households in Tarai use tubewell as their major source of drinking water, functionality of the water points is significant elements in managing drinking water. Households were asked about the functionality of water points and 93.7% of households reported that their water points were functional (Table e. of Annex 3.2). in the case of nonfunctional, 94.8% of households reported that they collect water from their neighbor (Table f. of Annex 3.2).

Water Management Mechanism and Readiness to Pay Tariff

Water management mechanism is one of the significant elements of drinking water system. During the survey, respondent were asked about the water management system available and functional at local level. 93.0% of households reported that there is no any water management mechanism at their locality. 7% (2447 Hhs) has reported there are some mechanism which is functional for management of drinking water. Out of 2447 households, 44.7% of households reported that municipality is working for managing water problems at their community where 38.0% reported Water User's Committee as the Water Management Mechanism.

During the survey, households were asked whether they were ready to pay tariff against the water service from any agencies. Most of the houses in Tarai uses tubewell as main source of drinking water and they do not prefer to pay. Only 53.1% of households reported that they are ready to pay tariff for water service. The households, who were ready to pay tariff, were also asked about the amount they wanted to pay. 76% of households replied that they are ready to pay less than NPR 50 per month; 21% of households are ready to pay NPR 51-100 per month (for Detail see Annex table g. and h. of Annex 3.2).

Water Quality Test and Water Treatment

Arsenic and iron are renown problems in ground water. The study collected the knowledge of households about testing water quality. As the result, 79.7% of households reported that they do

not have knowledge of testing water quality. Only 20% of households found having knowledge about testing of water quality.

Among the households (7092) with knowledge of testing water quality, only 23.2% of households found having idea about the agency which support in testing of water quality (for Detail see Annex table i. and j. of Annex 3.2).

Out of total households, 74.6% of households have reported that they have no practice of testing water quality. Among the households with practice of testing quality, 6.6% have tested Arsenic, 21.6% have tested Iron and less than 3% of households have tested hardness, total coliforms, E-coli, turbidity, FRC and other (for Detail see Annex table k. of Annex 3.2). It shows a poor level of knowledge and practice of testing water quality.

Local practice of treating water is other important factor in water management. The study tried to know about the practice of treating water and asked households about their practice. 80.6% of households reported that they do not have practice of water treatment. Those households who used to treat water have practice of boiling by 13.8%, 2.6 % of households have using candle filter and 2.4% are using bio-sand filter. Boiling water is common practice in rural Nepal to treat water (for Detail see Annex table l. & m. of Annex 3.2) whereas awareness is needed for using other techniques of treating water. In the case of using water from unimproved source, Total Sanitation Guidelines 2016 assumes as indicator that any kinds of technology for treating water will be used by all households.

The households, who do not treat the water, were asked the reason for not treating the water. As their responses, 63.1% households assume that water being used at home is already clean and no need to treat. For the same question, 27.5% of households reported that they have no idea to clean or treat the water. Similarly, 8.6% of households reported that they do not have capacity to afford the cost of treating water. It shows that the last two categories are not aware about the water treatment. The last category of households who are assuming water treatment is very expensive also are wrong.

Practice of Cleaning Vessel and Storing Water

To understand the practice of cleaning vessel, households were asked about their habit. 53.8% of households reported that they have practice of cleaning vessel every time while they collect water. 42.2% of households reported that they clean vessel every day and 2.9% households were found never Cleaning their vessel (for Detail see Annex table n. of Annex 3.2).

Observation of Container and Utensils

Observation of drinking water container is one of the key activities of Total Sanitation as provisioned in Total Sanitation Guideline 2016. During the survey, enumerator were requested to observe the practice of drinking water management system at home. 75.6% of households were found keeping their water container separately (for Detail see Annex table o. & p. of Annex 3.2). Household heads were also asked about the materials used for cleaning vessel with multiple choice and 73.5% of households replied that they are using Soap and detergent powder as their first choice to cleaning vessel, 60.9% of households are also using Ash as cleaning materials.

During the observation, it was noticed that 70.4% of households have practice of keeping drinking water container above floor level and away from contamination (for Detail see Annex table q., r., s., & t. of Annex 3.2). It was also observed that 64.6% of households have water container with

narrow mouth and in 64.1% of households, containers have been observed with lid. Whereas, 59.3% of container have been observed with lid in place at time of visit.

Similarly, it was also observed that 75.5% of households were using utensil to draw water from container. Out of user, the observer reported that 75.6% of households have practice of keeping utensil cleaned and stored in a hygienic place. In the same time, 80.0% of container were noticed clean inside and 78.2% outside too (for Detail see Annex table u., v., w., & x. of Annex 3.2).

Dirty Water Management

Construction of improved sewerage system in urban area is one of the indicator of Total Sanitation Guidelines 2916. During the FGD and KII, it was said that there were no any improved sewerage system in study area. Households were asked, how they were managing the dirty water generated from their homes. Only 4.0% of households reported that they sent the dirty water to the sewerage. 65.1% of households dump water at open hole and 18.8 let the dirty water in open space. Only 10.9% of households have a practice of using dirty water at kitchen garden (for Detail see Annex table y. of Annex 3.2).

Water Management during Disaster

Because of low land, Tarai is most vulnerable for flood. Respondent were asked to share their experience of managing water during the flood. It was recorded that only 6.2% of households (2,147) have experience of inundating their water points during disaster. Out of these households, only 17.4% of households have experience of using water from own storage during the disaster. Borrowing from neighbor not affected from flood (43.8%) and wait until flood level is down (38.8%) was their coping strategy during the disaster. These show the low level of preparedness for drinking during floods (for Detail see Annex table z. and aa. of Annex 3.2).

Maintenance of Waterpoints

This study has tried to make query about the gender based involvement in the maintenance of water points. Most of the study's findings and belief at development activist level is female member of the family is made key responsible for domestic work like fetching water and cooking. In the case of maintenance, study showed that male members (26.7%) are more responsible than the female member (2.0%). In 6.0% of households, water points were maintained by both of family member. Whereas, a lager portion of the households (65.7%) have reported that they maintained their waterpoints by mechanics. Households were also asked about the satisfaction against the service of mechanics. 92.5% of households reported that they were satisfied with the service of mechanics (for Detail see Annex table ab. and ac. of Annex 3.2).

4.2 Access to Improved Sanitation Facilities

Access to improved sanitation has been key development sector in Nepal since it is established key challenge for community development. This study has been carried out from the tarai region of Nepal where the practice of using toilet is poorer in compare to other region. Most of the then Village Development Committees (VDCs) declared Open Defecation Free (ODF) for their territory but still to be noticeable open defecation in Tarai. For this reason, access to sanitation has been a key section of this study. To measure the quality and accessibility of sanitation, Join Monitoring Program (JMP), a universal monitoring system introduced and led by UNICEF and WHO, has developed 5 steps ladder. According to JMP ladder, there are five categories as follow:

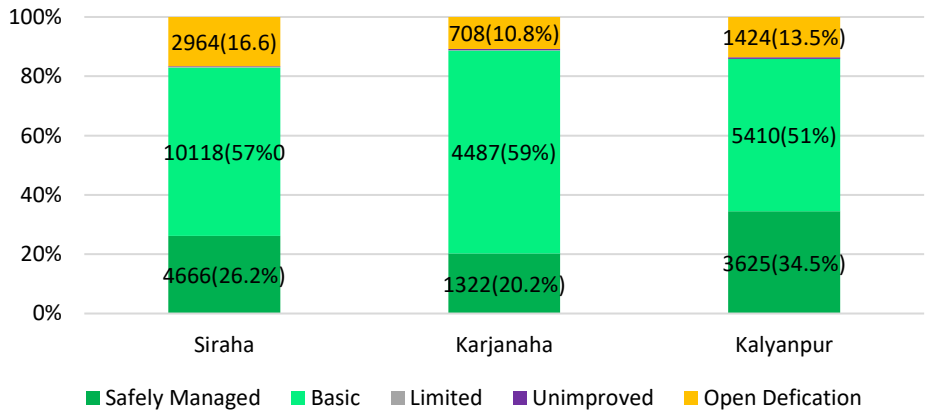
A. **Safely Managed:** Use of improved facilities which are not shared with other households and where excreta are safely disposed in situ or transported and treated off-site
B. **Basic:** Use of improved facilities which are not shared with other households
C. **Limited:** Use of improved facilities shared between two or more households
D. **Unimproved:** Use of pit latrines without a slab or platform, hanging latrines or bucket latrines
E. **Open Defecation:** Disposal of human faeces in fields, forests, bushes, open bodies of water, beaches and other open spaces or with solid waste

Improved: Improved sanitation facilities are those designed to hygienically separate excreta from human contact, and include: flush/pour flush to piped sewer system, septic tanks or pit latrines; ventilated improved pit latrines, composting toilets or pit latrines with slabs. Safely Managed, Basic, and Limited are categorized into improved and Unimproved and Open Defecation into Unimproved.

There was no sewerage system found in the study area (Siraha, Kalyanpur, and Karjanaha) and toilet types Flush to Septic Tank were categorized into **Safely Managed.** Similarly, toilets Flush to Double Ring Pit (Ring with Lid), Flush to Single Ring Pit (Ring with Lid) were into **Basic**; connected to composting toilet/biogas as **Limited;** Pit latrine without slab/Open Pit as **Unimproved; and** households without toilet into **Open Defecation.**

As the survey findings, 27.5% of households have reported having **Safely Managed** sanitation system. Majority of the surveyed households (57.4%) were found to have a Basic type of sanitation facility in their home, consisting of either a single (39.5%) or double (17.9%) ring pit toilet. While limited (0.1%) and unimproved (0.4%) toilets were found in less than 1% of all homes. Nearly one out of seven households still admitted to open defecation (14.6%), households without toilet. During the survey, the surveyor observed that 15.7% of households had no toilets which is slightly more than the survey findings (for details see table b. of Annex 3.3).

Fig. 4.3: Availability of Toilet in JMP Ladder



This proportion is even higher in Siraha municipality where about 16.6% or nearly 3,000 households practice open defecation (Table 4.1).

Table 4.1: Households by Availability of Toilet

Municipality	Safely Managed	Basic	Limited	Unimproved	Open Defecation	Total
Siraha	4666	10118	43	37	2964	17828
Siraha	26.2%	57%	0.2%	0.2%	16.6%	100.0%

Karjanaha	1322	4487	4	27	708	6548
Karjanaha	20.2%	69%	0.1%	0.4%	10.8%	100.0%
Kalyanpur	3625	5410	2	59	1424	10520
Kalyanpur	34.5%	51%	0.0%	0.6%	13.5%	100.0%
Total	9613	20015	49	123	5096	34896
Total	27.5%	57%	0.1%	0.4%	14.6%	100.0%

Use of public and community toilets by those without a toilet at home is very low, possible due to the unavailability of such facilities everywhere. While 11.1% of the households said they use their neighbor's toilet, a vast majority (85.6%) out of 5096 households without a toilet admitted using open space for defecation.

During the survey, 76.8% of visited toilets were found clean during observation and 96.6% of toilets found covering pit with lid. Similarly, the enumerator observed that 67.7% of toilets found open with sufficient light (for details please see table b., c., d., e., & f. in Annex 3.3).

Plan to Construct Toilet

What is even more puzzling is that a third of the households (34.2%) without any toilet said they do not plan to construct a toilet any time soon. Among those who want to construct a toilet, only 29.6% plan to do it by themselves, while the rest said they would construct if they received a full (32.1%) or a partial (38.3%) grant for the toilet. In contrast, 97.6% of all households with a toilet said they made it with their own investment (For details please see Tables in Annex 3.3).

Practice of Constructing Toilets and Practice of Maintenance

Survey showed that 85% of households have toilet and a curiosity was raised that how the households constructed their toilet. Out households (29,800) with toilet, 97.6% of households reported that they built their toilets in their own investment while the percentage is higher in Siraha (99.6%) and Karjaha (99.4%) than in Kalyanpur (93.2%). 16.0% of households reported they have experience of filling toilet in last three years while 12.2% of toilets were found full during observation.

Out of filled toilets, 59.5% of households reported that they made their toilets free using private safety tanker. 11.2% of households used labor and 3.3% dug out themselves (for details see tables j., k., l. in Annex 3.3). 92.8% of service taker were found satisfied against the service of private safety tanker whereas the service was reported quite expensive (NPR 500 per ring) during the FGD.

Use of Toilet

Among the households with toilet, 4.5% were reported that senior citizen and children are not using the toilet. Very small number of male and female member of the family also reported as not using the toilet. Out of households (1,335) not using the toilet, 61.0% reported that they do not use the toilet because they do not have long practice of using toilet and 41.7% of households reported that toilet was not being used because of too younger age. The indicator provisioned in the Guidelines of Total Sanitation requires all family member to use the toilet. Among the surveyed households, 70.0% of households were found with children at home and 36.9% of

households reported they were using potties and disposing inside toilet while 21.7% of households reported that they have practice of defecating their children at open place and disposing near garbage (for details please see table n., o., p., & q. of Annex 3.3).

Defecation in Flood

6.8% of households were found having experience of destroying their toilet in flood. 3.9% reported that their toile had been damaged totally and 2.95 partially during flood. Out of flood affected households (1,987), 77.6% reported that they defecated at open place during the flood, only 11.2% used temporary toilet, 9.7% reported they used neighbor's toilet which was not inundated.

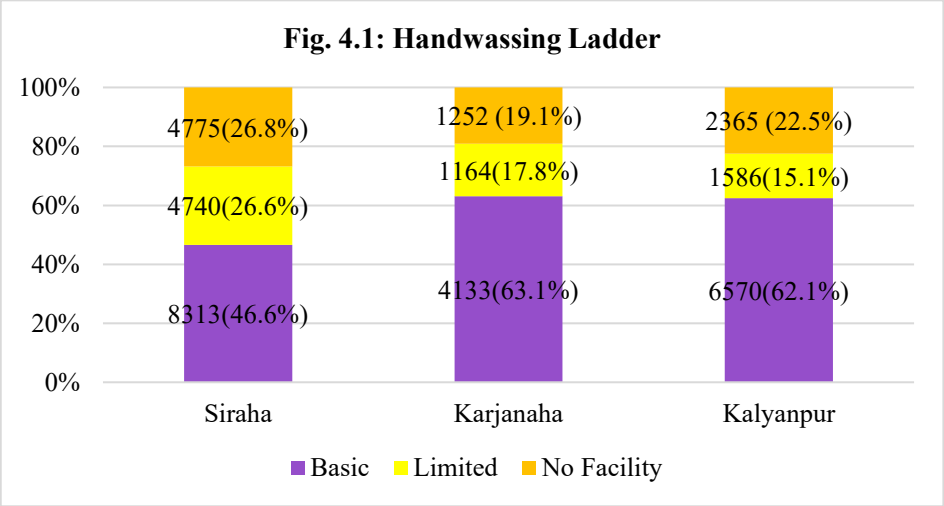
4.3 Hand Washing and Personal Hygiene

Practice and conditions that help to maintain health and prevent spread of disease is known as hygiene. It includes practice of handwashing, menstrual hygiene management and food hygiene (JMP). Hygiene has long-established links with public health and it is included in SDG target 6.2 represents increasing recognition of the importance of hygiene and its close links with sanitation. To monitor and establish standard for measuring the development in hygiene sector, JMP has develop three layers New JMP ladder for hygiene. Based on this ladder, hygiene facilities is categorized into three layer as below:

A. **Basic:** Availability of a handwashing facility[1] on premises with soap and water
B. **Limited**: Availability of a handwashing facility on premises without soap and water
C. **No Facility:** No handwashing facility on premises

To feet the data into JMP ladder, households with handwashing station at water point with soap were put under Basic, households with handwashing station outside bathroom and toilet without soap were put into Limited and households without both facility were kept into No Facility. Through this calculation, 54.5% of households were found using Basic level of handwashing facilities, 18.4% were found using Limited level of handwashing facilities, and 27.1% of households were found No Facility. It means, more than one fourth portion of households do not have handwashing facility (for details see fig 4.1 and table 1&2 of Annex 3.4).

[1] Handwashing facilities may be fixed or mobile and include a sink with tap water, buckets with taps, tippy-taps, and jugs or basins designated for handwashing. Soap includes bar soap, liquid soap, powder detergent, and soapy water but does not include ash, soil, sand or other handwashing agents (JMP 2019).



Handwashing Practice

Level of awareness in Tarai can be observed increasing. 97.3% of households reported that they wash their hands in critical situation. Only 2.7% reported washing hands occasionally. The portion is comparatively higher in Karjahana (5.6%) and Siraha (2.7%) than in Kalyanpur (0.7%) (for details please see table 3, 4, 5, & 6 in Annex 3.4).

Data showed that 77.3% of households are using soap to wash hands. Unfortunately, a larger portion of population is still using Ash (7.5%) and Mud/Sand (7.0%) to wash hands which was declared unhygienic by JMP and Guidelines for Total Sanitation 2016. During the survey, only 93.1% of handwashing stations were observed functional with water (90.8%).

Bathing Facilities

Bathing facility is significant indicator to measure the level of hygiene in the community. Data showed that 72.3% of households have no separate bathroom and getting bath at private tap/tubewell stand. Ony 14.3% of households have separate bathroom while the percentage is higher in Siraha (23.6%) and Kalyanpur 7.4% (for details please see table 7 & 8 of Annex 3.4). 96.8% of households reported that they use soap and detergent powder to wash cloths while 3.2% use water only.

4.4 Household Sanitation

Cooking Practice

In this section, sanitation inside home is covered which is one of the significant part of the total sanitation. What people use in inside activities e.g. cooking, eating, and practice of managing utensils. 77.9% of households were found using firewood as main cooking fuel at home while the percentage was reported higher in Karjana (87.6%) and Kalyanpur (84.1%) than Siraha (70.7%). Straw, beck dung, rice-cover are local fuel in Tarai region and 37.2% of households reported to use as main fuel. Liquid Pressured Gas (LPG) is new fuel to cook in rural area. 21.2% of households reported they were using LPG (for details please see table 1, 2, & 3 in Annex 3.5). Similarly, it was reported that 77.8% of households have separate cooking station while 18.9% have adjoining with common room which was not supportive for house environment.

Practice of Washing Utensils

For keeping home hygienic, cleaning of utensils is good practice. While the survey found that 75.0% of households were using soap or detergent powder as the washing materials as their first choice. Similarly, 60.9% of households choose Ash in second as the washing materials. 3.6% of households are still using mud as washing materials which was declared unhygienic by the Guidelines of Total Sanitation 2016. The percentage was found higher in Siraha (4.7%) than Kalyanpur (2.7%) and Karjanaha (2.2%) (for details please see table 4, 5 & 6 in Annex 3.5). A significant findings was 70.6% of households did not have a practice of drying utensils after washing which can lead contamination. 25.1% have practice of drying the utensil in sunlight and 4.0% used to place the utensil in rack.

4.5 Food Hygiene and Nutrition

Practice of Keeping Edibles

Nutrition is another key elements of WASH. How people eat and how people work with edible things concern significantly with the individual health and hygiene. During the survey, it was found that only 17.8% of households have practice of storing foods segregating edible and non-edible items. 18.1% of households have bad practice of storing foods items at one place. A larger portion of households (41.4%) used to store foods inside the kitchen (for details please see table 1 & 2 of Annex 4.6). As a good practice, 97.6% of households used to wash good and vegetable with clean water before eating while 1.8% rubbed with cloths or hand and 0.5% have bad habit of eating edibles without washing.

Practice of Kitchen Garden

Kitchen garden supplies fresh edibles e.g. fruits and vegetables. In the commercializing society, kitchen garden can support people to be healthy and hygienic. During the survey, some questions regarding the practice of kitchen garden were forwarded. A significant percentage (73.3%) of households was found with not practice of kitchen garden. 23.4% of households were found practicing kitchen garden for family consumption and only 0.8% of households have practice of kitchen garden for selling purpose. Out of gardening family, 73.3% of households found not using pesticides whereas 7.0% households use organic pesticides which sounds good practice. 8.8% of households were found using chemical pesticides but the quantity of pesticides was not covered by the questionnaire (for details please see table 3 & 4 of Annex 4.6).

Food Habit

Food habit is key element to determine individual's health which is interlinked with WASH. Survey has included questions to cover the food habit. Household head expressed their response with multiple choice that 91.4% of households said they were consuming seasonable fruit and vegetables. As the second choice, 83.1% of households reported they eat animal product (Fish, Meat, Egg) (for details please see table 5 of Annex 3.6).

Similarly, 32.6% of households eat Seasonable Fruit and Vegetable on daily basis (Table 4.5.1). 30.4% of households for Animal Product (fish, meat, egg); 29.6% for Fat, Oil, Sugar; and 30.4% for Rice and Alternative on daily basis (for details please see table 6 of Annex 3.6).

Table 4.5.1 Food Schedule

Food Types	Daily	Weekly	In 15 Days	>15 days	Total
Seasonable fruits and vegetables	10379	8308	6084	7113	31884
%	32.6%	26.1%	19.1%	22.3%	100.0%
Animal product (Fish, Meat, Egg)	8653	7724	5876	6229	28482
%	30.4%	27.1%	20.6%	21.9%	100.0%
Fat/Oil/Sugar/Salt	8581	7701	5991	6730	29003
%	29.6%	26.6%	20.7%	23.2%	100.0%
Rice and alternative	8109	7232	5518	5823	26682
%	30.4%	27.1%	20.7%	21.8%	100.0%

Around 22% of households used to consume these foods in the interval of more than 15 days which might be potentially malnourished.

4.6 Solid Waste Management

Production and Management

Solid Waste Management is one of the key component of WASH promotion. During the survey, households were asked about the types of waste generated from house and strategy adopting to manage of 14 waste e.g. Medicine cover/packaging/Bandage; Remnants of fruits and vegetables; Plastic; Battery; Clothes; Jut; Metallic (Tin, Iron, copper, wire); Broken glass and bottles; Remnant of food; Dust; Rubber; Carton; Paper; and Packaging materials. It was found that 60.0% of households are producing remnants of fruits and vegetables; 55.0% produces dust, 50.2% produce paper garbage, 50.0% produce plastic garbage and 49.0% produces garbage of medicine cover/packaging/bandage (for details see table 1 & 2 of Annex 3.7).

During the survey, household heads were asked with multiple choice about their practice of solid waste management. Responses were compared on cross-action basis e.g. how an individual manages remnants of fruits and vegetables for example. Survey asked to the respondents about the management practice of 14 waste e.g. Medicine cover/packaging/Bandage; Remnants of fruits and vegetables; Plastic; Battery; Clothes; Jut; Metallic (Tin, Iron, copper, wire); Broken glass and bottles; Remnant of food; Dust; Rubber; Carton; Paper; and Packaging materials.

Responses for each item of waste was treated as whole and calculated percentage. From findings, 37.4% of households expressed their practice that they throw the Remnants of Fruits and Vegetables anywhere and only 22.5% have practice segregating into degradable and nondegradable. Similarly, 28.6% of households throw Plastic anywhere and 36.2% have practice of burning after gather at a place. In overall, 48.9% of households have a practice to burn wastages after collecting at a place, whereas, 35.6% have practice of throwing anywhere. Both practice are accepted as bad practice. Only 15.7% of households have practice of segregating into degradable and nondegradable to sell or handover to the municipal garbage collector (Table 4.6.1). This is the practice that the Guidelines of Total Sanitation 2016 provisioned as an indicator to be promoted.

Table 4.6.1: Practice of Waste Management at Home (Multiple Response 34,896 HHs)

Types of Waste	Burn after gathering at a place	Handover to the Municipal garbageman	Segregating into degradable and nondegradable	Sell to recycling vendors	Throw away anywhere	Not Stated	Total
Medicine cover/packaging/Bandage	4477	1231	1917	222	3645	32	11524
%	38.8	10.7	16.6	1.9	31.6	0.3	100.0
Remnants of fruits and vegetables	4366	1361	3380	221	5611	79	15018
%	29.1	9.1	22.5	1.5	37.4	0.5	100.0
Plastic	4537	688	1638	2038	3578	40	12519
%	36.2	5.5	13.1	16.3	28.6	0.3	100.0
Battery	976	543	697	957	1838	12	5023
%	19.4	10.8	13.9	19.1	36.6	0.2	100.0
Clothes	3049	605	1273	369	2745	32	8073
%	37.8	7.5	15.8	4.6	34.0	0.4	100.0
Jut	2204	538	858	106	1977	20	5703
%	38.6	9.4	15.0	1.9	34.7	0.4	100.0
Metallic (Tin, Iron, copper, wire)	856	588	910	1026	1051	10	4441
%	19.3	13.2	20.5	23.1	23.7	0.2	100.0
Broken glass and bottles	1424	521	931	813	1866	12	5567
%	25.6	9.4	16.7	14.6	33.5	0.2	100.0
Remnant of food	2655	510	2351	116	4734	42	10408
%	25.5	4.9	22.6	1.1	45.5	0.4	100.0
Dust	5028	596	1530	231	6535	64	13984
%	36.0	4.3	10.9	1.7	46.7	0.5	100.0
Rubber	2859	291	1030	170	2444	15	6809
%	42.0	4.3	15.1	2.5	35.9	0.2	100.0
Carton	4201	322	1347	437	2583	28	8918
%	47.1	3.6	15.1	4.9	29.0	0.3	100.0
Paper	5660	559	1484	874	4364	40	12981
%	43.6	4.3	11.4	6.7	33.6	0.3	100.0
Packaging materials	3051	76	623	114	2370	10	6244
%	48.9	1.2	10.0	1.8	38.0	0.2	100.0
Total	45343	8429	19969	7694	45341	436	127212
%	35.6	6.6	15.7	6.0	35.6	0.3	100.0

Impact of Poor Waste Management

Awareness creation is one of the objectives of community development programs. In resepect to solid waste management, level of awareness in study area seemed to be higher. Only 7.4% of households have found not aware about impact of poor waste management. In multiple response, 63.7% of respondents expressed their knowledge that spread of bad smell if waste is not managed properly. 52.8% of households as their second choice accepted that epidemic can be emerged because of poor waste management. Similarly, respondent replied as next answer were produced (29.4%), loose the beauty of settlement/city (29.6%) and polluted the historical and natural resource (25.4%) (for details please see table 2 & 3 of Annex 3.7). But 99.0% of households reported that the local government (municipality) do not have any mechanism to collect the solid waste and don't send vehicle. It was also accepted during the FGD with ward committees and KII

with the Mayor and Deputy Mayor that there is no mechanism to collect solid waste whereas Karjanaha Municipality has purchased 2 tractors for garbage collection but not in operation (KII, CAO, Karjanaha).

Willingness to Pay

Respondent were asked whether they were interested to pay service charge if municipality or any private party will provide vehicle service to collect waste. 43.6% of households were found not ready to pay. Including not ready, 45.6% of households reported that they are ready to up to NPR 20 per month whereas 10.8% are ready to pay up to NPR 50 per months. The percent is higher in Kalyanpur (20.8%) and Karjanaha (14.3%) than in Sirha (8.1%) (for details see table 4 in Annex 3.7).

Practice of Keeping Cattle and Dung Management

One of the major source of solid waste is domestic cattle and management of waste from cattle is another challenges in community. 48.9% of households in the study area have been found with cattle farming. The percentage is assumed higher during FGD. 31.4% of households reported that they are keeping their cattle at separate cowshed, 14.5% said they kept cowshed attached with house. Only 3.1% of households accepted that they kept their cattle at road side. During the field visit, most of the households along the roadside were observed keeping cattle at roadside and the percentage might be higher (for details see table 5 of Annex 3.7).

Cow dong is accepted as holly things in Hindu culture. On the other hand, it is also major source of cooking fuel in Tarai region where no forest is exist. Households were asked how they were managing the cow dung and 53.0% of households shared their experience that they Prepare charcoal of dung for cooking. Similarly, 41.5% of households composite dung as fertilizer (for details see table 6 of Annex 3.7).

Household were asked about the divided role in managing dung at home. Out of cattle owner, 52.2% of households responded as female is responsible to manage dung. Interestingly, 1.9% of HHs reported that male use to manage dung. 45.9% of HHs responded they have practice of involving both male and female in management of dung at home. While role is slightly varied in managing other solid waste e.g. 65.2% for female, 4.1% for male, and 30.7% for both (for details please see table 7 & 8 of Annex 3.7). Findings are not stranger while domestic and dirty management works are assigned to women socially in Tarai community. These findings have approved this values once.

4.7 Waterborne Diseases

The study has tried to map the idea and status of waterborne diseases which is accepted as the results of malpractice of WASH. Households were asked about the impact of poor WASH practice with multiple choice to options. 26.6% of households were found reluctant about the impact of poor WASH practice. 71.0% of HHs performed their awareness that Diarrheal, Cholera, dysentery, typhoid, hookworm, polio etc. can be produced because of poor WASH practice (for details, please see table 1 of Annex 3.8).

To scope out the status of waterborne diseases, households were asked the incident of diarrhea as they remember within last two weeks. Only 7.1% of households reported that any of their family member was infected by diarrhea within last 15 days. It might be higher during flood in July.

Survey also asked about their knowledge about managing diarrhea at home. 51.2% of households shared their experience that they used allopathic medicine to control the diarrhea. Similarly, 35.9% of HHs reported that they used Oral Rehydration Solution to control the diarrhea which is accepted as awareness based solution. As their recall, they got the idea to control the diarrhea and skin diseases at home through FCHVs (60.7%), Municipality (15.5%), Social Media and Newspaper (14.2%), TV/Radio (12.6%), and NGO/INGO (9.6%) (for details, please see table 2, 3, and 4 of Annex 3.8).

4.8 Menstrual Hygiene

Menstruation is a natural phenomenon occurs with female. Unfortunately, Nepalese society is still rigorous to accept as natural process. The norms and values developed years ago in the society are still ruling society generating violence against women. People in Nepalese community are still prohibiting female to participate in certain public places and ceremony e.g. temple, and public function. In last November, a women died in a Chao Goth[2] because of cold while she was prohibited to stay in home during her menstrual period in Karnali province. To scope the sensitivity of menstruation, this survey also included questions in the household survey.

Prohibition During Period

79.3% of households were found with female of menstrual age. The households with female of menstrual age were asked about their practice. 2.9% of respondents shared their practice of sending outside of house at separate cowshed and other place during the period. In the FGD, participants claimed there is no such practice in Tarai community. These type of practice can be observed in Hill Brahman community (FGD). 58.6% of households claimed that there is no any type of prohibition in the community while 38.8% claimed that female is prohibited to enter the temple during her period. Negligible percentage were report for other prohibition e.g. Prohibited to cook and touching water (6.6%); prohibited to participate in party and festival (5.9%); and Prohibition to stay with brother, Father and male relative (4.0%). Similarly, 13.1% of households reported that they do not send their girl to school during her period (for details , please table 1, 2 & 3 of Annex 3.9).

Perception towards reason for not sending school was found quite mixed responses. 50.5% of households reported that they do not send girl to school during her period for inadequate facilities at school while 18.0% said they do not send girl to school because of severe pain and high bleeding. Similarly, the other reasons said were bulling or shame (16.2%), Fear (7.9%), and superstition e.g. touching books is sin (7.4%). These responses indicate that public places like schools are not girlfriendly during period (for details , please table 4 of Annex 3.9).

Maintenance of Hygiene

Maintaining hygiene during menstruation is very crucial task during the menstruation. Survey asked the respondent with female of menstruation age about the source of water for bathing and cleaning during period. A mixed type of responses was expressed. 80.0% of households said private tap/hand pump is the main source of water. Similarly, 3.5% for public tap but the FGD and KII validated that there are very limited public tap in the study area. 2.4% of HHs shared their practice of using water from pond during period which is not accepted as hygienic practice (for details, please table 5 & 6 of Annex 3.9).

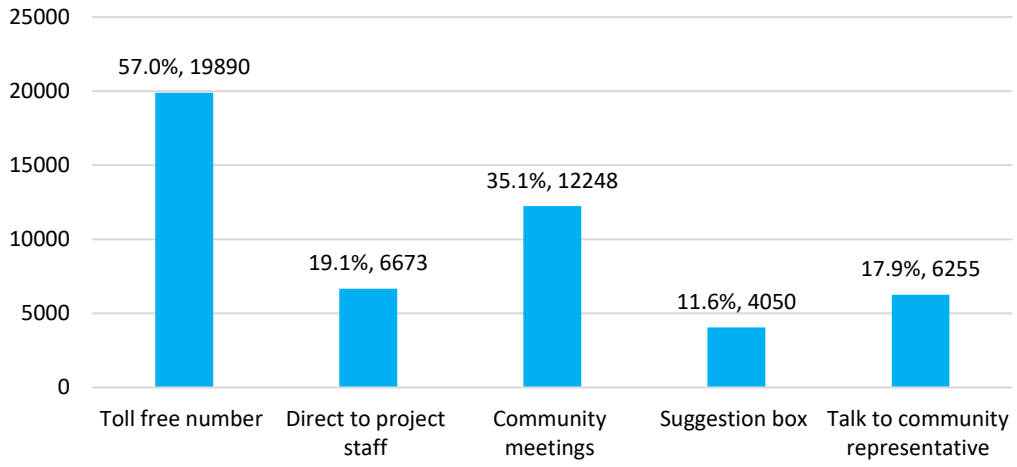
[2] A shed, specially built for women to stay during menstruation in Western Hill of Nepal.

Regarding the idea on sanitary pad, 37.6% of respondents were found not familiar with the sanitary pad. 28.4% of respondent replied they were using disposable pad and 14.8% were using reusable while 19.2% replied they were using both types of pad.

4.9 Accountability

WHH/SABAL Nepal is in Siraha district with responsibility of supporting development in WASH sector. Since it has public and social responsibility, to be accountable towards community is its other responsibility. For improving its accountability strength, the has asked some questions to the household representatives. Only 7.0% of (2437) HHs were found aware about Toll Free number WHH/SABAL Nepal to provide feedback and complain. Among aware HHs 62.3% of households got information about the Toll Free from project staff but very limited households have been using the Toll Free number for providing feedback and complain but they preferred Toll Free number as first choice. In the second choice, they choose community meeting (35.1%) as way to provide feedback (see Fig. 4.9.1).

Fig. 4.9.1: Prefered mechanism to provide feedback and complaint (Multiple Response - HHs 34,896)



WHH and its partners are adopting the Prevention of Sexual Abuse Guideline (PSEA) and Policy for Prevention of Corruption. Survey scoped out the awareness level of community about these policies. Very few (17.2%) households replied they were aware about the policies being adopted by WHH and its partners (for details, please see table 1, 2, 3, & 4 of Annex 3.10).

CHAPTER: V
BASELINE INDICATORS FOR THE PROJECT

5.1 Introduction

Strengthening Municipal wide WASH Governance for Social Change in Siraha District is a 3 years project (2019-2021, supported by BMZ/VCA/WHH and implemented by SABAL Nepal, which support the three municipalities (Siraha, Kalyanpur and Karjhana) of Siraha district to achieve safe drinking water, total sanitation, nutrition and livelihood by strengthening WASH governance at municipal level. The **Overall objective (impact)** of this project is**:** Improving the health and nutritional status of the Siraha District population through strengthened WASH governance and the provision of basic water, sanitation and hygiene (WASH) services; gender equality and empowerment of disadvantaged groups in Siraha. This project has 4 specific objectives (Outcomes):

Outcome 1: Improved, sustainable access to water, sanitation and hygiene and improved nutritional status of disadvantaged communities through self-help initiatives (micro level)
Outcome 2: Disadvantaged groups and women are economically strengthened through income- generating measures and partnership projects (micro level).
Outcome 3: Capacities of local governments, state service providers and municipalities are strengthened to provide high quality, sustainable and accountable WASH services (meso level).
Outcome 4: The Provincial and Provincial Governments take up proven activities from the project in order to institutionalise and scale them (macro level).

There are 19 indicator in total e.g. 4 for outcome 1; 3 for outcome 2; 2 for outcome 3; and 10 for outcome 4. One of the main objective of this baseline survey is to carry out comprehensive survey including situation and context analysis to feed the baseline information to measure the achievements of the project. Now, the household survey has been carried out and numeric data of some baseline indicators have been calculated. This survey covered only household level information. Policy study and institutional survey is another aspect of the comprehensive study. Based on the household data the baseline milestone has been set in the log-frame in 5.2.

5.2 Baseline Indicator Log-Frame Framework

Based on household survey, baseline indicators are fitted in the project log-frame which was provided in project document. In overall, indicators are not equally distributed e.g. 2 indicators for outcome 3 and 10 indicators for outcome 4. This imbalance can produce an unscientific judgement of project achievements of the projects. Some of the indicators are seemed more vague which need more composite data to measure indicator. Before launching it, a slight revision is needed. Available baseline status are arranged in following log-Frame:

Matrix 1: Log-Frame of Project

Overall objective (impact): Improving the health and nutritional status of the Siraha District population through strengthened WASH governance and the provision of basic water, sanitation and hygiene (WASH) services; gender equality and empowerment of disadvantaged groups in Siraha

Indicator Statement	Unit	Baseline Survey 2019	Target by the end of the project	Remarks
Outcome 1: Improved, sustainable access to water, sanitation and hygiene and improved nutritional status of disadvantaged communities through self-help initiatives (micro level)				

Indicator Statement	Unit	Baseline Survey 2019	Target by the end of the project	Remarks
Target households use sustainably managed and secure sanitary services	Percentage	27.5 (Safely Managed)	85	
Percentage of target households use sustainably managed and safe drinking water supply services (standard indicator Welthungerhilfe and indicator SDG 6.1)	Percentage	9.6 (Safely Managed in Winter Season)	90	
Percentage of girls and women of reproductive age in the target population use appropriate sanitary items during the period	Percentage	43.2 (Disposable & Reusable)	60	
Percentage of 5000 target households implement improved nutrition and hygiene practices.	Percentage	50.7 (IINH, Annex 4)	50	Target to be revised
Outcome 2: Disadvantaged groups and women are economically strengthened through income-generating measures and partnership projects (micro level).				
Groups at municipal level are in a position to set up WASH micro-enterprises.	Number	0	9	
WASH economic plans are supported by a financing mechanism.	Number	0	6	
Percentage of the entrepreneurs have doubled their income by the end of the project.	Percentage		50	After finalization of potential entrep(Mini Baseline)
Outcome 3: Capacities of local governments, state service providers and municipalities are strengthened to provide high quality, sustainable and accountable WASH services (meso level).				
Evidence-based, fully calculated and realistic community-wide WASH plans be developed and implemented by the relevant local authorities to enable and maintain universal WASH access in each community (SSI principles).	Number of WASH Plan	0	3	
Databases and monitoring systems (inventory and monitoring; WSUC database and performance monitoring; water resource inventory and monitoring, including water quality) will be established in each municipality by the end of the project	Status	Not established	Monitoring System will be established	

Indicator Statement	Unit	Baseline Survey 2019	Target by the end of the project	Remarks
Outcome 4: The Provincial and Provincial Governments take up proven activities from the project in order to institutionalise and scale them (macro level).				
The local government adopts the strengthening of the system and acts as a resource for other municipalities.	Status	Not adopted	Be adopted	
Percentage of WASH networks have increased their capacity for learning, knowledge sharing and management	Percentage	6.25	75	45 WWASHCC+ 3 MWASHCC
Information on the innovative and effective activities of the project and learning processes will be disseminated through sectoral learning and exchange events	Number of Events	0	5	
Knowledge products are produced and distributed to stakeholders in the WASH sector at the federal and provincial levels	Number of Knowledge products	0	3	
The digitised WASH information management system is operational in all three municipalities to enable systematic data collection, evaluation and use.	Number of digitised WASH information management system	0	3	
In all 3 municipalities, percentage of the WASH coordination bodies are sustainable.	Percentage	8.16	100	+DWASHCC
Number of WUSCs are institutionalised (with statutes), registered with the relevant Nepalese government authority and operational - Best Practice/Pilot Model	Number of WUSCs		45	To be revised
Monitoring and accountability processes for WASH service providers for all municipal water supply systems are in place and operational.	Status	Not in place and operational	In place and operational	To be revised

Indicator Statement	Unit	Baseline Survey 2019	Target by the end of the project	Remarks
The share of the municipal budget used to directly promote WASH services has increased by	Increment rate (Percentage)		10	Can be fed from Municipal budget
Annual WASH reviews take place in each municipality in 2019, 2020 and 2021.	Number of Annual WASH reviews	0	9	

CHAPTER: VI
CONCLUSION

6.1 Introduction

Strengthening Municipal wide WASH Governance for Social Change in Siraha District, a 3 years project (2019-2021) needed a context and situation analysis to feed baseline indicators. For this purpose, this household survey has been carried out. Along with household survey, KII and FGD also were conducted to verify the household data. This survey has achieved number of findings in various sub-sectors. Very limited key findings are presented in this chapter. This chapter gives only the highlights of the findings.

6.2 Key Findings

WASH sector is vast itself. Coverage of the study may not reach that extent which is rooted at micro stages. Here are highlights of the study covering some sub-sector.

Access to Safe Water

- Most of the water sources of the study area are private hand/pumps.
- The area north from the highway are known as dry land and with scarcity of water source.
- During the dry season, 96.2 % of Households found using water from improved source e.g. **Safely Managed** (9.6%), Basic Source of water (81.1%), and Limited source of water (5.5%).
- 3.7% of households are found using water from **Unimproved** source.
- In the rainy season 95.8 % of households are using water form **Improved** Source which included **Safely Managed** (6.6%), Basic (88.8 %), and Limited (0.4%) source of water.
- Only 4.3% of households were reported as having drinking water from Unimproved source during rainy season.
- There is no any water management mechanism in three municipality except Water User's Committee in very limited community.
- 79.7% of households reported that they do not have knowledge of testing water quality.
- 74.6% of households reported that they have no practice of testing water quality.
- 80.6% of households reported that they do not have practice of water treatment.

Access to Improved Sanitation Facilities

- 27.5% of households have reported having **Safely Managed** sanitation system.
- 57.4% of households were found to have a Basic type of sanitation facility.
- 14.6% of households found without toilet, which was similar to findings of observation (15%).
- Among the HHs without toilets, 34.2% said they do not plan to construct a toilet any time soon.
- Among the HHs with toilet, 4.5% were reported some of family members are not using the toilet.

- 6.8% of households reported flood destroyed their toilet.

Hand Washing and Personal Hygiene

- 54.5% of households were found using Basic level of handwashing facilities, 18.4% were Limited, and 27.1% of households were found No Facility.
- 77.3% of households are using soap to wash hands while 7.5% using Ash and 7.0% using Mud/Sand.

Household Sanitation

- 77.9% of households were found using firewood as main cooking fuel at home.
- 60.9% of households are still using Ash as washing materials.

Food Hygiene and Nutrition

- 17.8% of households have practice of storing foods segregating edible and non-edible items.
- 18.1% of households have bad practice of storing foods items at one place.
- 73.3% of households do not practice of kitchen garden.
- Out of gardening family, 73.3% of households found not using pesticides.

Solid Waste Management

- 60.0% of households are producing remnants of fruits and vegetables at lager quantity; 50.2% produce paper garbage, 50.0% produce plastic garbage and 49.0% produces garbage of medicine cover/packaging/bandage.
- 37.4% of households throw the Remnants of Fruits and Vegetables anywhere and only 22.5% have practice segregating into degradable and nondegradable.
- 28.6% of households throw Plastic anywhere and 36.2% have practice of burning after gather at a place.
- 7.4% of households have found not aware about impact of poor waste management.
- No vehicle from municipality is mobilized to collect garbage whereas Karjanaha Municipality has purchased 2 tractors for garbage collection but not in operation.
- 43.6% of households were found not ready to pay charge for garbage collection service while 45.6% of households are found ready to up to NPR 20 per month
- 48.9% of households found farming cattle and 3.1% of households out of cattle farmer accepted that they kept cattle at road side.
- 53.0% of households preparing charcoal of dung for cooking.
- Out of cattle owner, 52.2% of households responded as female is responsible to manage dung.

Waterborne Diseases

- 7.1% of households reported that any of their family member was infected by diarrhea within last 15 days.

Menstrual Hygiene

- 79.3% of households were found with female of menstrual age.
- 58.6% of households claimed that there is no any type of prohibition in the community while 38.8% claimed that female is prohibited to enter the temple during her period.
- 13.1% of households reported that they do not send their girl to school during her period because inadequate facilities at school (50.5%) and sever pain (18.0%)
- 80.0% of households use water from private tap/hand pump to take bath during menstrual period.
- 37.6% of respondents were found not familiar with the sanitary pad. 28.4% of respondents replied they were using disposable pad, 14.8% reusable and 19.2% both types of pad.

6.3 Recommendation

In this section, study has listed out some points that can bring out some results at community level if it is addressed by either of parties. There are many lapses at both government and public level which is not leading the development to the right track. Following are some bullets which are suggested FGD, KII and the survey.

- WASH sector is found neglected at local government level. Very small chunk of budget is allocating for drinking water, unfortunately, sanitation is still to be the major needs of local government.
- Municipalities as the local government are still to enact policies and laws for WASH sufficiently. Sensitizing and promoting to enact Acts and Policies could be opportunity for the project.
- During the KII and FGD, it is found that municipalities and its Ward Office do not have WASH plan and appropriate budget and better to facilitate to develop it.
- Most of the sources of water in the study area are private tubewell and very few participants reported about the practice of water quality test. Initiation of campaign for testing water quality can bring good result.
- Study showed that deprived and marginalized community are lacking private tubewell. On the other hand, tubewell is not accepted as the system of centralized controlling mechanism. FGD participants suggested to promote overhead tank with controlling distribution system for all beneficiaries.
- Enhancing technical knowledge and skills for water treatment will be the opportunity to promote safe water user community.
- Municipalities have declared ODF in its territory but the survey shows around 15% of open defecation. During KII, authorities requested interventions for Post ODF support. It will be an opportunity for the projects.

- Community itself needed to be mobilized for awareness raising on HHs waste management practices
- Studies showed that there is no any system for waste management and it will be big opportunity to promote establishing solid waste management system.
- Although municipalities are allocating budget for land-fill site they have no plan and budget for promoting sanitation
- Local governments are found seeking partnership to management sewerage/drainage system.
- Initiation for ensuring menstrual health management (MHM) friendly public toilet in school, health posts and other public places is requested.
- A large number of households is using traditional stove to cook and a larger space is noticed to promote improve cooking stove (ICS).
- Data showed a weaker practice of kitchen gardening, which is one of the major means of hygienic live, can be promoted effectively.
- An integrated awareness session on personal hygiene and community WASH is suggested to project by FGD participants.
- Mosquitos in Tarai in summer season is one of the major problems. During the FGD, it was reported local government was not taking any action to control the mosquitos. Project can coordinate to establish a system to control mosquitos every year.

REFERENCES

Joint Monitoring Program. United Nations Children's Fund (UNICEF) and World Health Organization (WHO). JMP Ladders. https://washdata.org/monitoring.

Nepal Water Supply, Sanitation and Hygiene Sector Development Plan (2016 – 2030). Kathmandu: Government of Nepal, Ministry of Water Supply and Sanitation.

Progress on household drinking water, sanitation and hygiene 2000-2017. Special focus on inequalities. New York: United Nations Children's Fund (UNICEF) and World Health Organization (WHO), 2019.

Total Sanitation Guideline 2016. Kathmandu: Government of Nepal, Ministry of Water Supply and Sanitation, 2016.