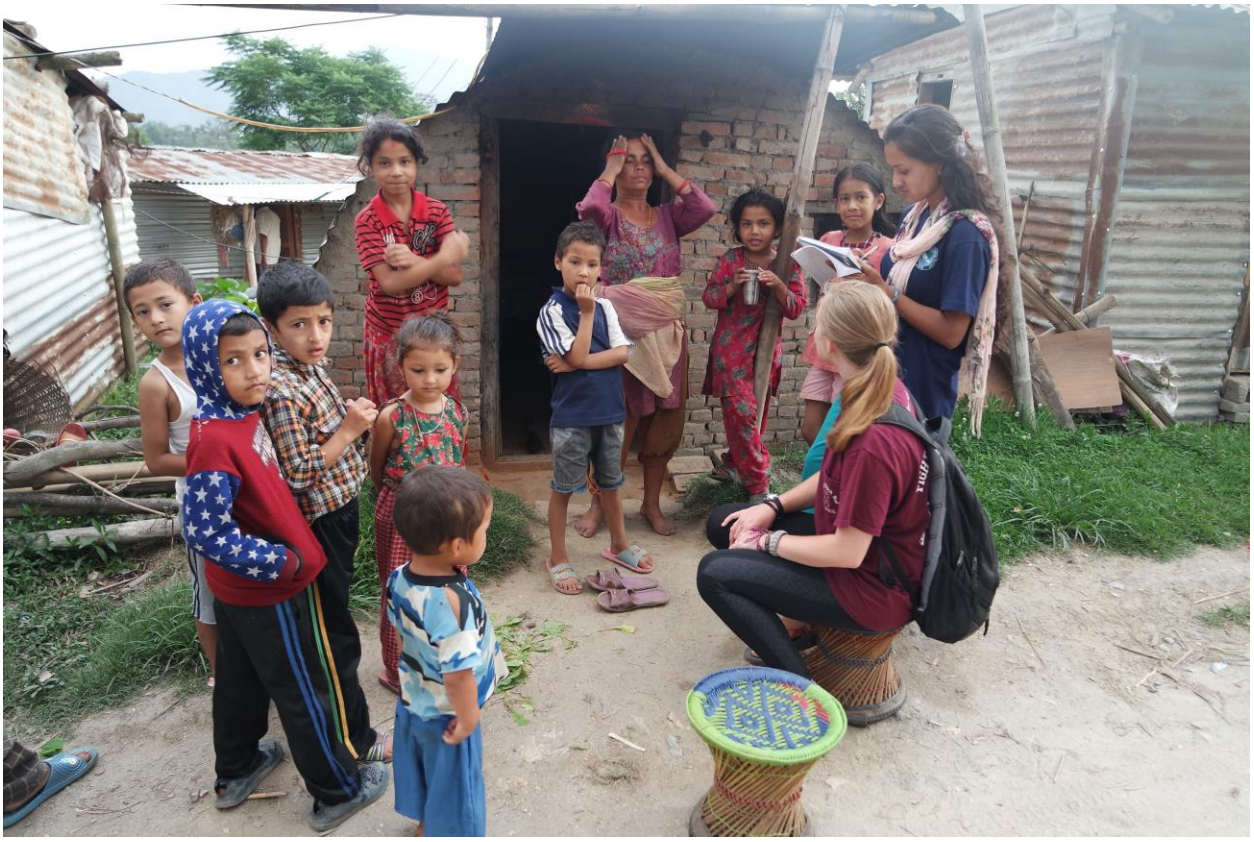
Volunteers Initiative Nepal

Kavresthali Ward 6

Water Research Report

Morgan Mercer, Vaiva Lilionyte, Jyoti Dangal



June 2016

Summary

This report contains findings from the water research carried out by VIN volunteers in Kavresthali Ward 6 in June 2016. The map of the area with water sources in five villages – Kaura, Tumka, Karkithok, Thali and Deviathan – is provided together with the survey results. 221 households were interviewed in these five villages in order to find out more about issues related to water and sanitation in the area. The results reveal that almost half of the people in ward 6 drink direct water, 15% of them do not have toilets and the majority of those use their fields. The findings also suggest that while 83% of people report they wash hands with soap before cooking and after using a toilet, soap was not seen next to every tap. Also, a significant amount of people report getting sick due to water, suggesting that further investigations should be carried out in order to determine exact causes. Although water testing work has already started, several other recommendations for future work are also made in this report – toilet construction, education about water and hygiene, protection of water sources and reliability of water supply.

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1. Introduction

In June of 2016, VIN conducted water research in Kavresthali, Nepal, which is a town in the Northern part of the Kathmandu valley. Kavresthali is divided into 3 wards: Wards 4, 5, and 6. The water research was conducted in Ward 6, which consists of 5 different villages: Tumka, Karkithok, Kaura, Thali, and Devithan**.** There are approximately 220 households between these villages. Kavresthali is a new placement for VIN, and this water research project is one of VIN's first ventures into the area. Thus, at this stage, the goal was to identify the main water related issues in these villages.

Over the course of the past month, water sources were located for each of the five different villages, every household was surveyed about water and sanitation issues, and a detailed map containing water sources of the area was created in the hope of grasping a better understanding of local health, hygiene and water standards.

2. Methods

2.1. Mapping Methods

A local volunteer with good knowledge of the area's water sources facilitated the identification of different water sources in each of the village.

A mobile phone's GPS system was used to obtain the coordinates of the water sources. These coordinates were used later to locate and mark water sources using Google maps.

2.2. Survey Methods

With the help of a local volunteer, households in ward 6 were interviewed to determine the overall health, hygiene, and water treatment in the area. The survey was based on the World Health Organization's (WHO) core questions on drinking water and sanitation, although it was slightly altered in order to better fit research goals. An extra question about health issues in each household was added to get a better understanding about issues related to water, and the question about the disposal of children's feces was removed. The complete list of questions is below.

<u>List of Survey Questions</u>

1. What is the main source of drinking water for you household?
2. What is the main source for household purposes, like washing hands and cooking? Can you show us?
3. How long does it take you to get water and come back?

4. Who usually does to the source of water to fetch it for your household?
5. Do you treat water to make it safer to drink?
6. What do you usually do to make it safer to drink?
7. What kind of toilet facility do members of your household usually use?
8. Do you share a facility with other households?
9. How many households use this facility?
10. After you have gone to the toilet, do you wash your hands?
11. Before you prepare or eat food, do you wash your hands?
12. When you wash your hands, do you use soap?
13. Do you have any health related issues due to water quality?

After surveying houses each day, the data was recorded into an Excel document and one notebook. Both of these resources have been submitted together with this report. The results were then put into a chart to consolidate information, making it easier to view and assess.

The chart is also divided to see responses to different questions. Water treatment methods are separated into those who use direct water, families that treat water, and households that use a combination of direct and treated water. The direct water category also includes families who filter by using a cloth because filtering by cloth does not adequately treat water to make it safer to drink. Methods of treating water included under the treat water category are filtering water, boiling water, using pills, and solar treatment.

The other three columns of the chart pertain to the hygiene of each household. The number of houses that do not have a toilet were counted; those that do not have a toilet are using their fields or other households' toilets. The number in parentheses is the number of houses who do not have a toilet and are using their fields.

The next column, Consistently Wash Hands with Soap, records the number of households that consistently wash hands with soap before cooking and eating and after using the toilet. There are several other houses that wash hands with soap after the toilet but not before cooking, so those families are not counted in this column.

The last column chronicles the number of households that spoke about different health issues in their house. These health issues include diarrhea, the common cold, fever, and/or stomach pain.

3. Results

3.1. Water Source Mapping

Thirty different sources were located in five villages of Kavresthali Ward 6. Coordinates for every source location can be found in a separate file submitted together with this report. Detailed map of the Ward 6 with located water sources is presented below.

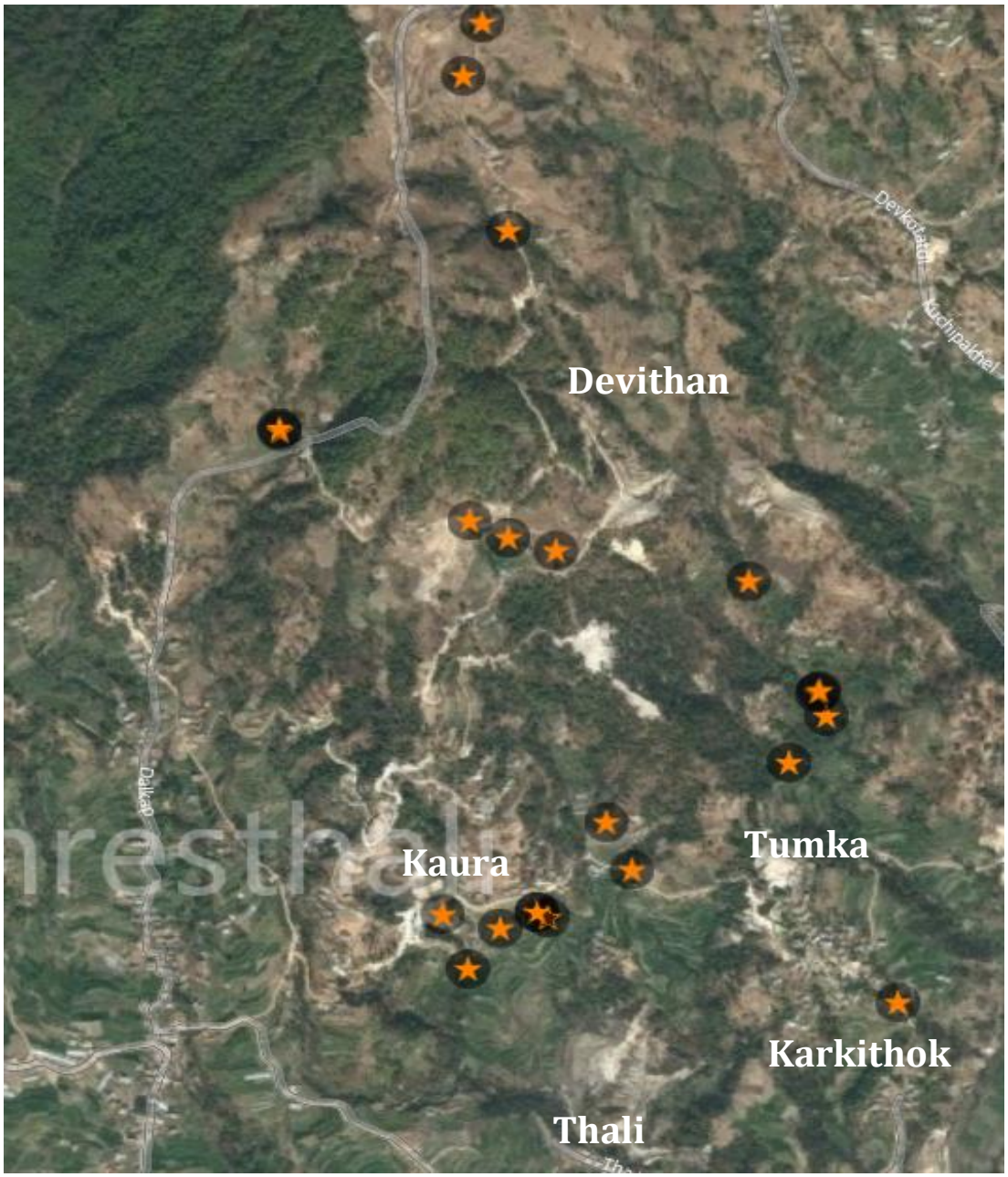


Fig. 1 – Kavresthali Ward 6 water sources

The following sections detail every source for each of the villages in ward 6. The photos for each of the sources are included in the folder submitted with this report. The photos are named accordingly.

3.1.1. Tumka Village

There were 12 water sources located around Tumka village. Eleven of the sources are adequate for water supply and one of them is dry. There is no water shortage in this village. In addition, the sources for this village were located during the first day of work and photos were taken in order to make identifying sources during the survey easier. However, at this point, the methodology for mapping of water sources had not yet been determined. Once there was a working solution for water source mapping, it was attempted to come back to the same water sources. There was difficulty accessing them during the monsoon, so only sources 1, 2, 3, 4 & 7 are marked on the map and 5, 6, 8, 9, 10, 11 & the dry source are missing.

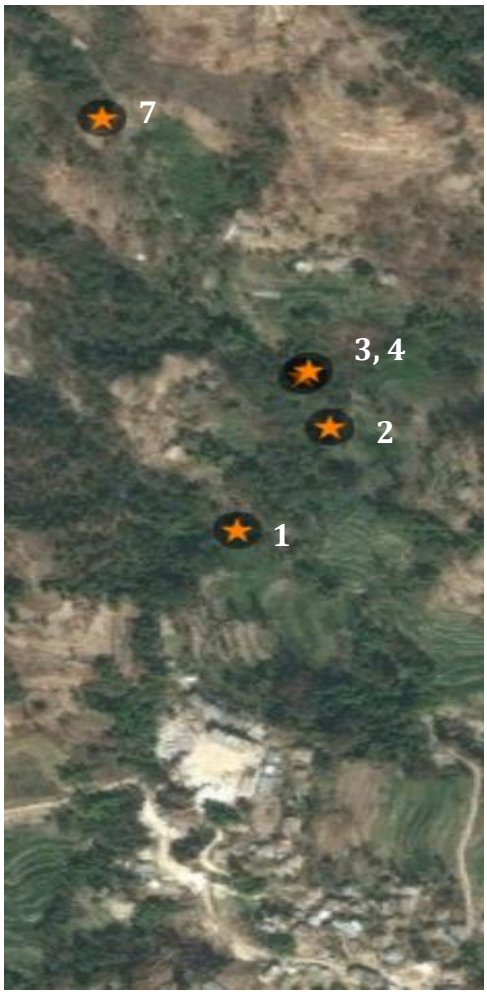


Fig. 2 – Tumka's water sources

3.1.2. Kaura Village

There are 11 water sources located in Kaura. There is also a government water tank located next to sources 16 & 17. The location for sources 19, 20 and 21 is approximate; these sources are slightly north of their marked location. This is due to difficulties with the GPS system. Source X1 is an underground source and no photo of it was taken.

People living in the north of the village are mostly using water source 18 and another water source higher up in the mountains. The source is extremely far away from the village (2-3 hour walk), thus households using this source pay a person living nearby to maintain it.

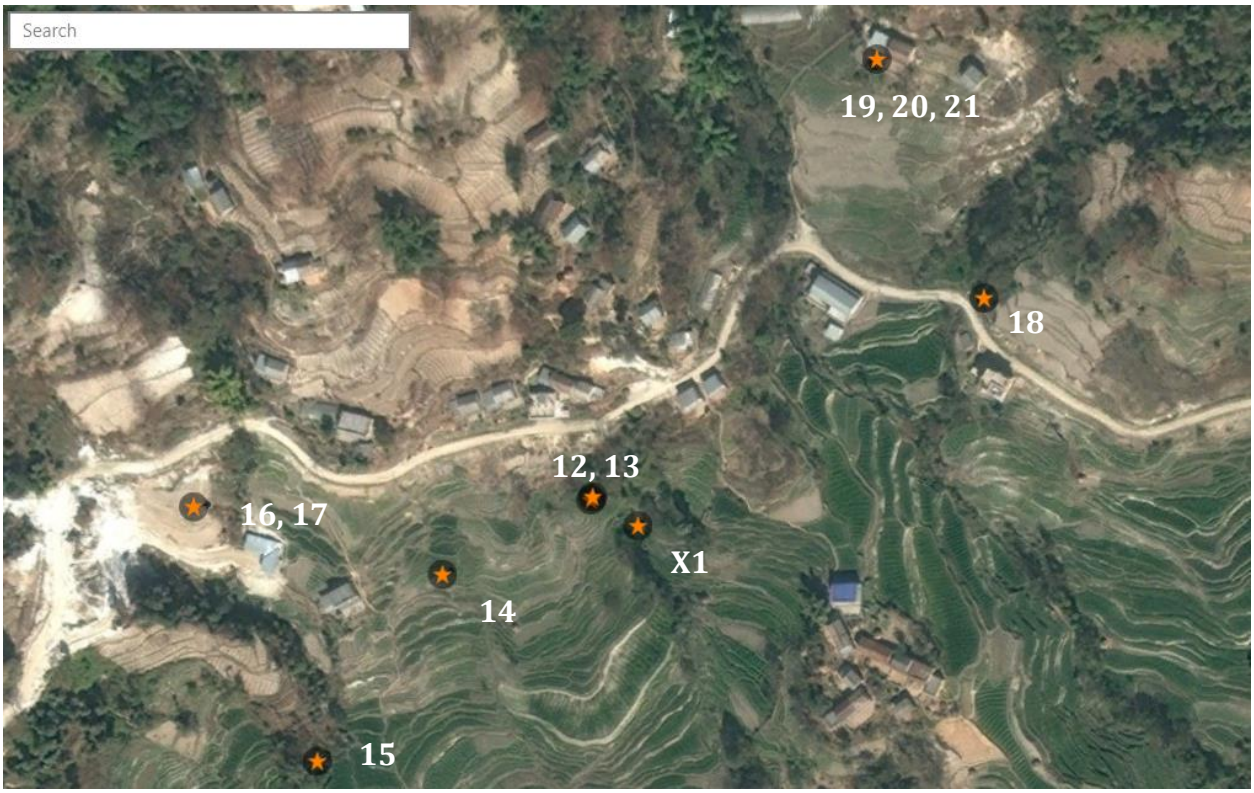


Fig.3 – Kaura's water sources

3.1.3. Karkithok and Kaura

Households in Karkithok village were mainly using water from sources 22 and 2. Source 22 was used by people living in the North of the village and it would take them 10-20 minutes to collect water from the source. Households in the South would use a public tap supplied by source 2. There is a common water shortage identified in the village.

The main water source in Thali is a government provided water source. A pipe transfers the water from Shivapuri National Park, and this source is not marked on the map, as it is far away from the village. Villagers who use this water source must pay the government between 100-300 rupees per month for the service.

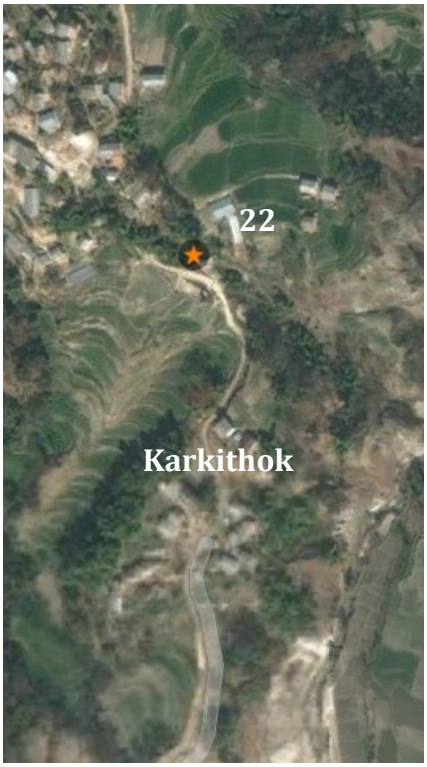


Fig. 4 – Karkithok's water source

3.1.4. Devithan

The last interviewed village was Devitan, a place high up in the mountains and relatively far away from the rest of the villages in the Ward 6. Eight water sources were located and mapped. There is one more source used in this village, which has not been mapped as it is very far from the village.

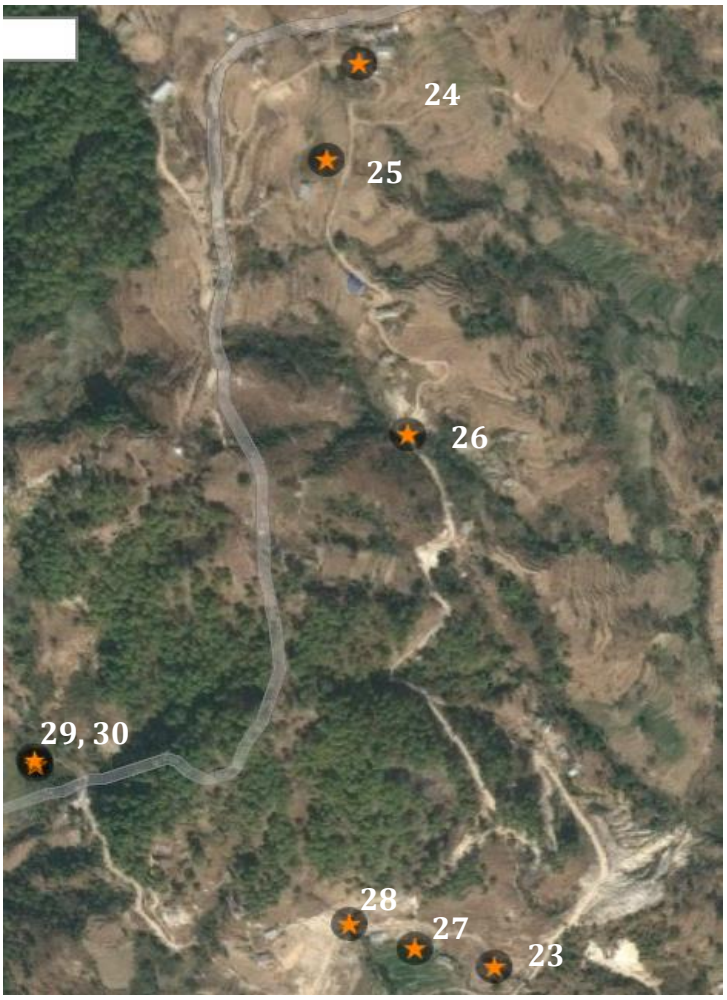


Fig. 5 – Devithan's water sources

3.2. Survey Results

Over the course of 3 weeks, 221 houses in five different villages of Ward 6 of Kavresthali were surveyed. The results are summarized in the table below. For a detailed explanation of each of the columns, see section 2.2. Survey Methods.

Village Name	Direct Water	Treat Water	Both	No Toilet (# Using Fields)	Consistently Wash Hands with Soap	# with Health Issues
Tumka **(55 households)**	2	47	2	4 (3)	54	9
Karkithok **(41 households)**	23	14	4	7 (5)	36	4
Thali **(32 households)**	13	14	5	4 (3)	23	5
Kaura **(59 households)**	37	16	4	8 (7)	45	11
Devithan **(34 households)**	32	1	2	10 (8)	26	5
Total (221)	**107 (48%)**	**92 (41%)**	**17 (7%)**	**33 (26) 15% (10%)**	**184 (83%)**	**34 (15%)**

Table 1 – summary of survey results

Results reveal that almost half (48%) of the households interviewed do not use any methods to treat water and drink direct water from the tap. The highest number of households treating water before drinking can be found in Tumka village where 47 out of 55 respondents drink filtered water.

A significant number of households (33 out of 221) do not have a toilet. Twenty-six of these households report they are using their fields, and the rest of the households are using somebody else's toilet. A number of people in this category mentioned that their toilet was destroyed during the earthquake. In addition, several people who have toilets mentioned that they were cracked during the earthquake, but they are still in use.

In addition, 83% of respondents stated they are using soap when washing hands after using the toilet and before cooking. There are several households who use sand for washing their hands, and others say they do not wash hands before cooking.

A significant number of people (15% of total interviewed) report getting sick due to water. Most of the time people mention having upset stomach or diarrhea, however another frequent answer is “common cold”.

4. Discussion

4.1. Water Resources

Most of the water sources have been identified and mapped for each of the village. However, due to time restrictions it was decided not to locate water sources high up in the mountains. This can be done later on if water testing reveals that the source may be contaminated. In that case, source water samples should be taken, making it possible to accurately locate the water source.

Although most of the households state that they do not usually have issues with water, Karkithok identified frequent water shortage. This could be due to the fact that 41 households are using only two sources. In addition, a couple of houses in Thali also report frequent water shortage. These houses are very close to Karkithok.

In general, most of the water sources are clean – there is not rubbish lying around – but only some of them are well protected from possible contamination. Many of the water sources contain water running from the mountains, however several sources are stagnant water in fields. The latter were found in Kaura, and water quality seems extremely questionable (e.g. water source 14, see photo in a folder attached).

4.2. Survey

As it can be seen from the results section, significant amounts of people do not treat their drinking water. There is either a lack of understanding that water should be treated or lack of awareness of suitable methods. Even though a number of people mention boiling water or solar water treatment, a significant amount of people filter by using a clean cloth (almost the whole village of Devithan).

In Tumka, Best Paani, a water filter company, distributed Biosand filters to the whole village the April 2015 earthquake. The owner of Best Paani is a relative of village members. Only 5 houses do not use a Biosand filter, and of those, one family was not here during the earthquake, another house’s filter broke, and three households treat water with different methods and filters.

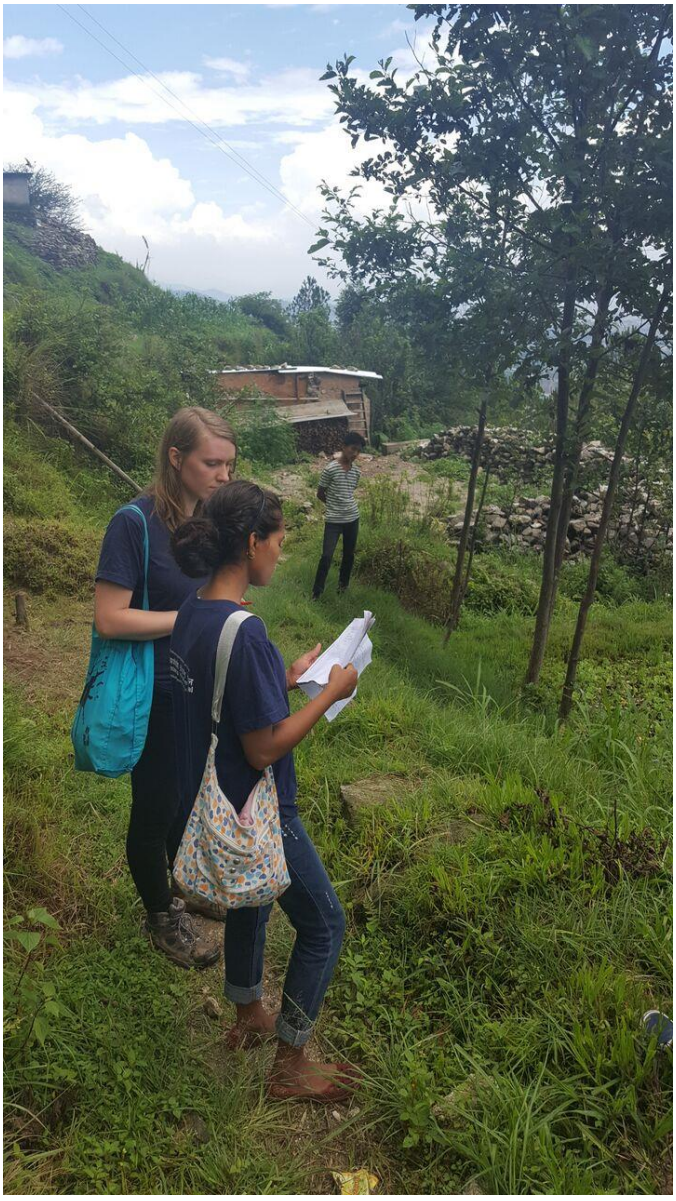
The survey also reveals that a significant number of households are using their fields because they did not have a toilet. In addition, several of the households who have toilets report their toilets were cracked during the earthquake. The use of fields and inadequate toilet is problematic because the runoff can pollute nearby water sources.

Even though a large amount of people report using soap while washing hands, observations of the houses does not agree with these statements. Several of the households have taps outside their houses, but soap is not clearly visible and accessible for the many of the houses surveyed.

The results for the question about health issues due to water can be interpreted in a number of ways. First of all, as it is rice planting season and a lot of people are working in the fields, it is often difficult to find them at home. In these cases, their relatives were interviewed. Even though the relatives provide reliable answers about water sources, toilets etc. they might not known everything related to the other family's health issues. Additionally, people may not link their illnesses to their water source, this choosing not to mention when we ask about water related health issues.

Of the ones who mention health issues, a number of households state that they tend to get sick more often during the monsoon season. This could be explained by large amounts of contaminants entering the water source due to the larger amount of rainfall and run off. Several households respond to this by changing their treatment of drinking water – e.g. use boiled water for drinking – during monsoon seasons or times of illness. The quality of water sources could also be linked to sickness. For example, families using their field's stagnant water (e.g. source 14) report health issues.

In general, there are too many factors that could cause health issues i.e. not washing hands after the toilet, not filtering water, and keeping drinking water in dirty containers. There is no direct correlation between not having a toilet and health issues, even though the numbers in the chart look similar. Further investigation should be carried out to determine precise causes so that further actions can be taken.



5. Next Steps

These are recommendations for the future work in the area:

- Water in the area should be tested in order to determine possible problems – firstly from the tap and containers where water is kept and if these are both found to be contaminated, then water sources should also be tested. Work on water testing has already started and will be presented in the following report.
- Open defecation should be eliminated – possibly helping people to build toilets and educating about the importance of using toilets.
- Present toilets should be inspected for suitability of use.

- Education of households including water treatment options (boiling, biosand filters, solar) and hygiene campaigns.
- Karkithok is struggling with water shortages - potentially finding a better way to store water or find additional water source for the supply.
- Gain a better understanding of where flush toilets are going because many of them are very close to water sources/running water.
- Provide better protection for water sources – a lot of them are open sources that are prone to contamination, especially in the monsoon seasons.

6. Conclusion

Most of the households in Kavresthali Ward 6 have reliable water supply and good knowledge of hygiene and sanitation. However, there is a significant number of households who drink direct water, use fields as a toilet, and/or who get sick due to water. There is a large amount of work that should still be carried out in the villages, including water testing, water treatment and hygiene campaigns, toilet construction, and better protection of water sources. This will increase health and well-being of local people and will help to protect the environment.