A Transect Walk

to observe water and sanitation infrastructure undertaken in the rural municipality San Andrés de Tupicocha in the Peruvian Andes

2020

This case study is part of the TRUST Project aimed to develop integrated water supply and sanitation concepts for sustainable water supply. For more information on this project see: www.trust-grow.de

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Abstract

Indicators are essential to monitor the progress of the Agenda 2030. An indicator summarizes information and helps policy makers to take important decisions regarding the implementation of measures to achieve the Sustainable Development Goals (SDGs). However, this requires data that is not available in many places. In order to fill this data gap, a transect walk with local stakeholders can contribute to the collection of additional qualitative data. This instrument was applied in San Andrés de Tupicocha, a village in the Peruvian Andes, in order to collect the necessary and missing data for assessing the situation regarding SDG 6.1 on drinking water and SDG 6.2 on sanitation and hygiene. The analysis of this data revealed a deeper insight into the exciting conditions concerning drinking water and sanitation. The integration of the newly gathered data in the evaluation of SDG 6.1 and 6.2 leads to more realistic results in comparison with the exclusive use of statistic data of the Peruvian national census.

Keywords: transect walk, SDG 6, indicator, data gap, drinking water, sanitation

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Table of Contents

1 Introduction 1

2 Background 2

2.1 TRUST Project 2

2.2 San Andrés de Tupicocha 2

2.3 Evaluation of Water & Sanitation 3

3 Method – Transect Walk 6

4 The Transect Walk in San Andrés de Tupicocha 9

5 Results 14

5.1 Acquired Findings 14

5.2 Evaluation 17

6 Conclusions and Outlook 19

7 Literature 21

Annex 23

Questionnaires 25

1 Introduction

The Agenda 2030 comprises seventeen goals with the main objective of combating poverty. Sustainable Development Goal (SDG) 6 *'Ensure availability and sustainable management of water and sanitation for all'* highlights the need for clean water and sanitation. SDG targets 6.1 *'By 2030, achieve universal and equitable access to safe and affordable drinking water for all'* and 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'* with the respective indicators focus on safely managing drinking water and sanitation as well as on eliminating the use of surface water as a drinking water source and ending open defecation.

To achieve SDG 6, credible data is essential to support decision makers in forming policies and to set priorities. According to UN Water, sufficient data to calculate global baselines was only available for six out of eleven SDG 6 indicators. Reasons for the data gap are too little technical capacity, too few resources and lack of monitoring structures and data management systems (Harlin et al. 2020).

Filling this data gap should be a priority. As the UN (United Nations) special rapporteur on the human right to safe drinking water and sanitation states: “civil society […] brings qualitative value in analyzing and interpreting results to make sure that gaps in monitoring are detected, and that gender-specific needs are taken into account” (UNHRC 2016).

Therefore, it is important that communities are consulted in addressing existing problems. Needs and priorities must be considered when developing projects and policies and allocating responsibilities. A transect walk is a promising method to consult community members and to counteract the mentioned data gap.

This article reports on the implementation of a transect walk, to collect data on public and private sanitation facilities and to obtain additional information on water and sanitation. This was done in order to evaluate the local situation regarding SDG 6.1 and 6.2. The transect walk was conducted within the framework of the TRUST project funded by the Federal Ministry of Education and Research (grant number: 02WGR1426A).

2 Background

2.1 TRUST Project

The objective of the TRUST research project is the development of innovative concepts and planning instruments for sustainable water supply and wastewater disposal. The aim is to develop socially accepted concepts which are adapted to local conditions.

One part of the project is the evaluation of these concepts regarding their contribution to SDG 6. The achievement of SDG 6 is a cardinal challenge for planning, governance and water management, especially in prosperous water scarce regions. This is particularly the case where increasing demand for water is already well above the renewal rate of surface water. One of the specific challenges in the research area is the incomplete monitoring of polluted and overused water resources, the pressure of competition over limited water resources and the resulting social conflicts (Krauss et al. 2019).

The project focuses on the Lurín river basin, one of the three river basins which are important for the water supply of Lima, the capital of Peru. The Lurín basin can be divided into an upper catchment area and a lower catchment area. Seasonal rainfall is limited to the upper catchment area in the Andes, which is sparsely populated and characterized by steep slopes. Here the water is stored in artificial reservoirs and ponds. This water is used as a source for drinking water and irrigation. The lower catchment area has a wider flat valley bottom. Intensive agriculture, tourism, industry and an increasing population density towards the coast characterize this area (Krauss et al. 2019).

2.2 San Andrés de Tupicocha

To assess the current situation of the upper catchment area regarding safe drinking water (SDG 6.1) and adequate sanitation (SDG 6.2), the village of San Andrés de Tupicocha was selected as a case study in the TRUST project in order to exemplarily record the drinking water supply and wastewater disposal situation for a community of the Peruvian Andes in the upper Lurín catchment area.

San Andrés de Tupicocha is one of thirty-two districts of the province of Huarochirí in the department of Lima. The district covers an area of 83.35 km² and the village of San Andrés de Tupicocha is located at an altitude of 3300 meters above sea level (Google Maps 2018). The district counts approximately 1423 inhabitants. Main income source is agriculture and farming,

predominant sheep and cattle farming and cultivation of potatoes, legumes and fruit trees (iPerú 2018).

The district of San Andrés de Tupicocha has few water resources. These water resources origin typically from small springs. Main water source is the Ururí reservoir which stores around 450,000 m³/year. The water of Ururí reservoir is used for domestic use and for farming and agricultural activities. However, it is necessary to apply new irrigation techniques to improve production and safety (Krauss and Wasielewski 2019).

2.3 Evaluation of Water & Sanitation

To monitor progress towards the achievement of the SDGs, indicators are required. Indicators are important and useful as they summarize enormous flows of information and help herewith political decision making. In February 2016, the United Nations issued a set of indicators to evaluate and measure the progress of each target of the SDGs. The indicators were worked out by the Inter-Agency and Expert Groups which include representatives from national statistical offices as well as from regional and international organizations and agencies (UN ECOSOC 2016). A Joint Monitoring Programme (JMP) comprising World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) is responsible for monitoring SDG 6.1 and 6.2. The programme developed so-called service ladders for monitoring the achievements of the targets (WHO 2017). These indicators were used to evaluate the situation of San Andrés de Tupicocha regarding its drinking water and sanitation situation.

The Indicator 6.1.1 *'Proportion of population using safely managed drinking water services'* is monitored by JMP. The established service ladder classifies "safely managed" as the highest achievable level regarding drinking water services, followed by the classification levels of "basic", "limited", "unimproved" and "surface water". The same systematic is applied for Indicator 6.2.1 *'Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water'*. Highest achievable level is "safely managed" followed by "basic", "limited", "unimproved" and "open defecation" (see Table 1).

Service Ladder Definitions	Drinking Water	Sanitation	Hygiene
Safely Managed	Drinking water from an improved water source which is located on premises, available when needed and free from fecal and priority chemical contamination	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	-
Basic	Drinking water from an improved source, provided collection time is not more than 30 minutes for a roundtrip including queuing	Use of improved facilities which are not shared with other households	Availability of a handwashing facility on premises with soap and water
Limited	Drinking water from an improved source for which collection time exceeds 30 minutes for a roundtrip including queuing	Use of improved facilities shared between two or more households	Availability of a handwashing facility on premises without soap and water
Unimproved / No facility	Drinking water from an unprotected dug well or unprotected spring	Use of pit latrines without a slab or platform, hanging latrines or bucket latrines	No handwashing facility on premises
Surface water / Open defecation	Drinking water directly from a river, dam, lake, pond, stream, canal or irrigation canal	Disposal of human faces in fields, forests, bushes, open bodies of water, beaches and other open spaces or with solid waste	-

Table 1: JMP Service Ladder; Source: WHO (2017)

Existing Data and Data Gaps

Within the TRUST project, a monitoring concept was developed to improve the available data. Among other things, investigations on the status of water resources were carried out, e.g. water quality analyses (microbiological and physical/chemical) at selected sampling points in rivers, springs, groundwater wells, drinking water networks and wastewater discharges.

The basis for the evaluation of the status on drinking water and sanitation in San Andrés de Tupicocha is predominantly census data from 2007 and 2017 (INEI 2017b, 2017a). Census

data are usually compiled in 10-year intervals and do not directly address many issues related to drinking water supply and sanitation (Bartram et al. 2014). For the application of the indicators 6.1.1 and 6.2.1, additional information is needed which is not included in the Peruvian censuses of 2007 and 2017. In order to fill data gaps and to partially verify existing data, a transect walk was carried out, and additional qualitative data were collected. An overview of the missing data as well as the additional data collected in the course of a transect Walk is shown in Table 3.

The realization of the transect walk took place in cooperation with the CESAR A. VALLEJO school in San Andrés de Tupicocha. The school has around 200 students from the district San Andrés de Tupicocha (this includes the village of San Andrés de Tupicocha and several surrounding villages) counting primary and secondary level. Most of the teachers come from outside of the district.

3 Method – Transect Walk

A transect walk is a walk taken through a specific area of interest with local participants and professionals. The walk includes actions such as observing, asking questions, listening, looking for problems and possibly identifying solutions (FAO n.d.). It enables researchers to gather qualitative information and to explore existing conditions in the project area (Staden, D. et al. 2006). The participants are asked to express and share their knowledge about the existing conditions and circumstances. All information collected during the walk is to be documented and observations should be noted on a diagram or a map at the end of the walk (Keller n.d.).

Procedure

A study design ought to be carried out before starting the walk. First the participant group needs to be identified. It might be beneficial if the group includes all important stakeholders (Keller n.d.) or to conduct separate transect walks with women and men to clarify gender based differences. An additional approach is the realization of a transect walk within the framework of a research/planning process in a school (FAO n.d.). The second step includes the preparation of the route and possible additional preparation of interviews or questionnaires. Furthermore, it needs to be decided which recording device will be used. This can range from pen and paper to digital tools such as apps (Hemmersam and Morrison 2016). During the walk it is essential to discuss what is seen and to discover problems and possibilities for change (FAO n.d.). It is important to take time to ask questions in places where there are visible problems (Kamal Kar 2005). The last step is to analyze the walk, prepare a map or diagram with the observations made during the walk and promote discussions amongst the participants.

Strengths and Weaknesses

The transect walk is a powerful tool to identify perceptions from the perspective of the affected groups and to explain cause and effect relationships to the participants. When conducted with several groups, it helps to identify different problems that are perceived and enables learning and understanding of local practices. Transect walks are mostly used to assess rural areas and are cost-effective tools to address rural problems and collect spatial data effectively (Keller n.d.). Nevertheless, there are also challenges in implementing a transect walk. The determination of dates, participation of relevant actors, and their expectations play a major role. Table 2 displays a short summary of different strengths and weaknesses.

Strengths	Weaknesses
• It is a tool to answer and confirm questions and responses of participants	• Logistical aspects in terms of finding a day that may suit all informants.
• It is useful to increase the solidarity and familiarizing the participants with the community.	• The possibility of raising expectations amongst the residents whose community is being studied
• It enables participating people to share their knowledge of the local environment.	• Some participants may not be able or willing to take notes whilst walking around the village
• It provides a platform for participants like community leaders and experts to interact and exchange views on local environmental issues.	• It might be impossible to bring all relevant actors together

Table 2: Strengths and weaknesses of a transect walk (Keller n.d.; Staden, D. et al. 2006).

Data Collection

The indicators to evaluate the achievement of SDG 6.1 and 6.2 partly go into great detail, for example Indicator 6.2.1 asks about the availability of soap. However, census data does not contain any data sets on this topic. Specific data were collected through the transect walk and with additional questionnaires. The questionnaires contained questions on given conditions relevant for the assessment of the indicators. E.g. the presence of soap or whether water connections work. Other questions refer to personal impressions, hygiene conditions and the given privacy situation. Knowing that the collected data is not statistically valid, but still gives an overview of the given situation.

The transect walk is conducted with locals. This offers the opportunity to jointly question and evaluate the collected data. In addition, the participation of local residents offers the possibility to identify further critical areas and thus to adjust the planned route of the transect walk accordingly. The data were collected on 16 March 2018. The questionnaires can be found in the Appendix.

Table 3 gives a brief overview of the data required for the application of indicators 6.1.1 and 6.2.1, the availability of national census data (INEI) and the type of data collected during the transect walk.

	Indicator	Data source: INEI	Data source: Transect walk
Drinking Water	Type of Water Source	Data available	Data collected
	On premises	Data partially available	Data partially collected
	Available	Data available	Data collected
	Free from fecal and priority chemical contamination	No data	Data collected (no water analysis)
	-	*No data*	*Additional data collected on acceptability and water treatment at home*
Sanitation	Facility type	Data available	Data collected
	Shared with other households	No data	Data collected
	Excreta safely disposed	Data available	Data collected
	Treated off side	No data	Data collected
	-	*No data*	*Additional data collected on privacy requirements*
Hygiene	Handwashing facilities with soap and water	No data	Data collected
	Handwashing facilities without soap and water	No data	Data collected
	No handwashing facilities	No data	Data collected
	-	*No data*	*Additional data collected on perceived cleanliness*

Table 3: Overview on data availability and collection in San Andrés de Tupicocha

4 The Transect Walk in San Andrés de Tupicocha

The aim of the walk was to obtain additional data for the evaluation of SDGs 6.1 and 6.2 on water and sanitation. Beyond that, a second objective was to raise awareness of students and teachers about the necessity of hygiene measures, to ensure a high quality of drinking water, to promote the understanding of water resources, wastewater flows, and sanitation facilities, as well as the awareness of problems associated with them.

Identification of Participants

The choice of participants can be made for a variety of reasons, depending on their interest in the management of local natural resources, their long-term stay, their leadership role and their availability to participate. The transect walk described here was conducted with students and teachers of the CESAR A. VALLEJO school in the community of San Andrés de Tupicocha.

At the beginning the goal of the transect walk and the selection of participants were discussed with the mayor of the district. Further discussions took place by telephone and on site with the director and teachers of the school. In these discussions it was agreed to involve the students of the fourth and fifth grade. The main reason for this was the age of the students, between 14 and 17 years, and their basic knowledge on hygiene and the environment. Since it is the only school in Tupicocha, the students live all over the village and represent newly developed parts as well as less developed areas. In addition to the 12 students (9 girls and 3 boys), three teachers teaching environmental sciences participated.

Introduction and Explanations

A preliminary check of the planned route of the transect walk is recommended in order to be able to keep the given time frame. This preliminary inspection helps, among other things, to decide which important inspection points should be visited. The chosen inspection points focus on sanitary facilities, drinking water tanks and wastewater outlets.

Before the start of the transect walk, all participants met in the classroom. After the introduction, the local water cycle was briefly discussed with the students. The transect walk and the main idea (to assess, together with the local school, the current state of the water and sewage infrastructure, including public and school toilets) was presented and discussed. Booklets and pens were handed out and students were encouraged to take notes during the walk.

The route of the transect walk led to six pre-selected locations (see Figure 1). First stop - main water tank of Tupicocha; second stop - public toilets in Tupicocha; third stop - shaft for pressure reduction; fourth stop - wastewater effluent; fifth stop - pond; and sixth stop - school toilets.

Figure 1: Route of the transect walk in the village of San Andrés de Tupicocha; (Source: Google earth - Accessed 20.07.2020)

Implementation and Observations

The first inspection point was the water tank in Tupicocha (Figure 2). On the way to the tank, students and teachers were instructed to observe the environment and to note any noticeable aspects regarding the drinking water and sewage situation in the village. Arriving at the drinking water tank, safety precautions such as fencing and chlorination as well as other components of the tank were discussed.

Figure 2: Inspection point 1 - Main water tank

After the inspection of the water tank, the public toilets (Figure 3) close to a bus stop located below the tank, were inspected. For this location a questionnaire was prepared for the students to help them to note their observations. The female students inspected the women's toilet and the male students the men's toilet. Additionally, the questionnaires contained questions to describe the sanitary situation at their homes.

Figure 3: Inspection point 2 - Public toilets

The third stop was an intermediate shaft for pressure reduction (Figure 4). The environment and existing protection measures were discussed.

Figure 4: Inspection point 3 - Pressure reduction shaft

The fourth stop was the discharge point of wastewater into a nearby stream located below the village (Figure 5). During the inspection foam formations were observed at the wastewater outlet. Both origin and destination of the wastewater were discussed.

Figure 5: Inspection point 4 – Wastewater effluent

The fifth stop was at a small pond. The water collected there is used by local farmers to irrigate the surrounding fields. One of the most striking features of the water was its appearance, high turbidity and its unpleasant odor.

Figure 6: Inspection point 5 - Water pond

The last station was the inspection of the school toilets (Figure 7). Here questionnaires were also distributed to collect the necessary information regarding sanitation and hygiene.

Figure 7: Inspection point 6 - School toilets

5 Results

5.1 Acquired Findings

During the walk, visual information was collected and further information was provided by the participants. The following results are derived from these observations and discussions. Figure 8 shows the results collected by the students, summarized after the walk on a map of Tupicocha.

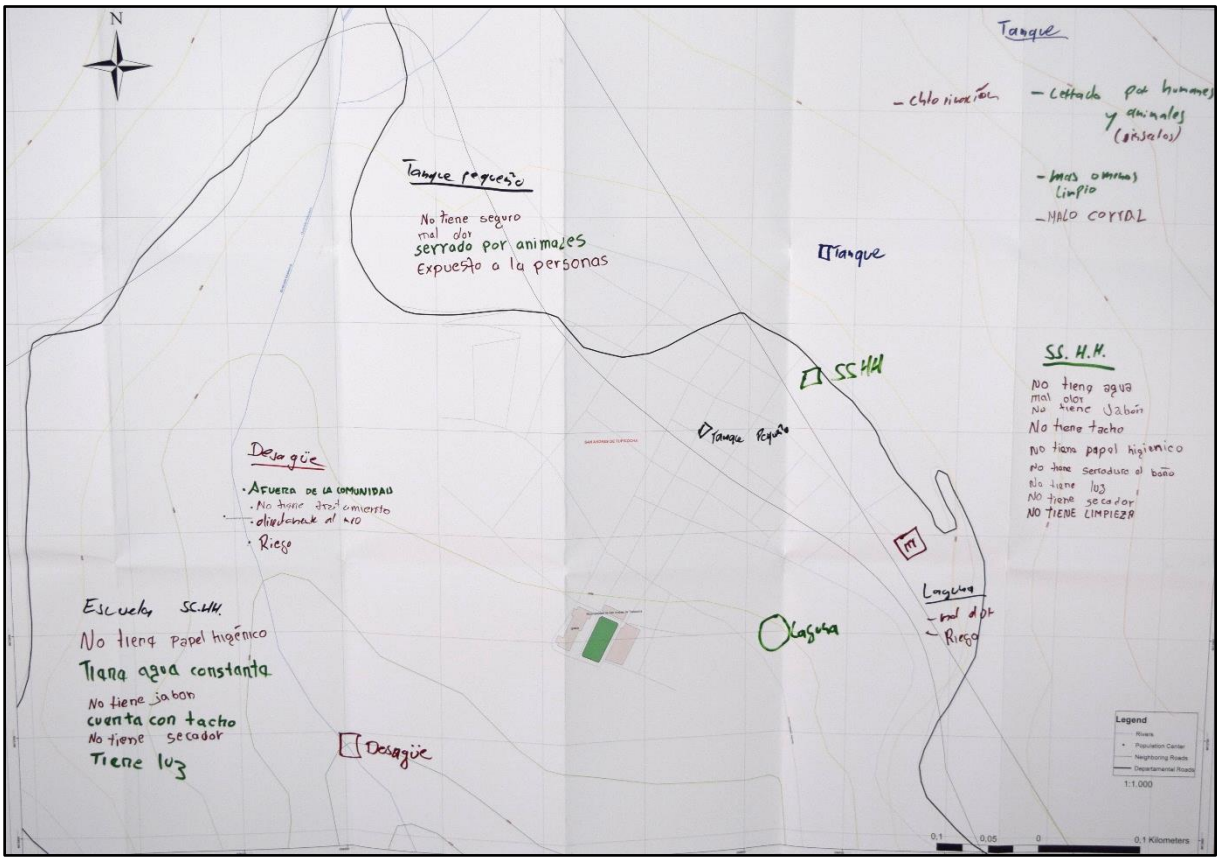

Figure 8: Transect walk results map

Inspection point 1: The main water tank is secured with surrounding fences, which offer a protection from trespassers and animals. The existing chlorination infrastructure could contribute to a better drinking water quality but does not guarantee for safe drinking water as parasites cannot be removed with chlorination. The chlorination unit is not working throughout the year. Directly next to the water tank there is a building for livestock. Small insects could enter into the tank through the ventilation. Overall of the tank appeared to be not accessible for other animals.

Inspection point 2: The public toilets have a water connection and are connected to the canalization. But privacy requirements are not given, because some doors were missing, or locks didn't exist or did not work. Also, cleanness was unsatisfactory for the students. Hand wash facilities existed, but without water and soap.

Inspection point 3: The water pressure chamber is used to lower the pressure in the delivery pipes. The tank is accessible for humans and animals. The lit of the tank was locked. Garbage and empty beer bottles could be found around the tank. The aeration of the tank is closed with a tap. Insects could enter the tank through the aeration, but no other animals.

Inspection point 4: The wastewater discharges without treatment into the stream. Two wastewater flows could be identified at this spot. One hidden under bushes (domestic wastewater), another one further above (wastewater from the local slaughterhouse). Further below the discharge point, the stream is used for irrigation, posing a potential health risk.

Inspection point 5: It appears that wastewater can enter the pond by seepage. Therefore, the water source could be contaminated. It is later used for irrigation also posing a potential health risk.

Inspection point 6: The school toilets provided adequate privacy, they are separated by gender and had bins and doors with working locks. Outside of the building a handwashing facility existed with running water, but no soap was available.

Additional information: During the walk animal excreta was observed nearly everywhere in the nonpaved streets. Furthermore, locally domestic waste dumped in the environment and bones of dead animals were observed (Figure 9). This represents a potential health risk, especially because free running dogs may carry pathogens into the houses.

Figure 9: Additional observations

During the transect walk it was reported that due to poor water quality there were incidents of sick people, especially children who also suffer from malnutrition. In 2017 there was an incident during which no child attended school due to illness, which was an alarming event for the teachers. A dead animal was the cause that contaminated the drinking water. The event showed and urged the importance for safe drinking water.

Acquired findings on hygiene

The results of the questionnaires regarding handwashing facilities as well as the presence of water and soap are displayed in Figure 10. Looking closely at the results, at first glance they do not seem conclusive. For example, 91% of the students stated that there is a handwashing facility in the public toilet, and 9% of the students stated that there is none, all referring to the same public toilet. Similarly, there are different statements regarding the availability of water. This may be due to the fact that some handwashing facilities were connected to water and functioning and others were not. The results concerning the absence of soap is clear (0%). Concerning the school toilet, there are similar irregularities, 75% of the pupils state that water is available, 100% state handwashing facilities are present, and 100% state that soap is not present.

Looking at the results of the questionnaires regarding the conditions at home, 92% state a handwashing facility is present at home, 58% state the presence of a handwashing facility with water connection and 83% state the presence of a handwashing facility and soap.

Although the data are not statistically sound, they show a clear pattern. It is obvious that no soap is available neither in the public toilets nor at school. However, it is apparent that most students have a handwashing facility, water and soap at home.

The ambiguous results may also be due to difficulties in understanding the questionnaire or to how to adequately fill in the observations. It is suggested to pay special attention to the formulation of easily understandable questions, especially when working with younger students.

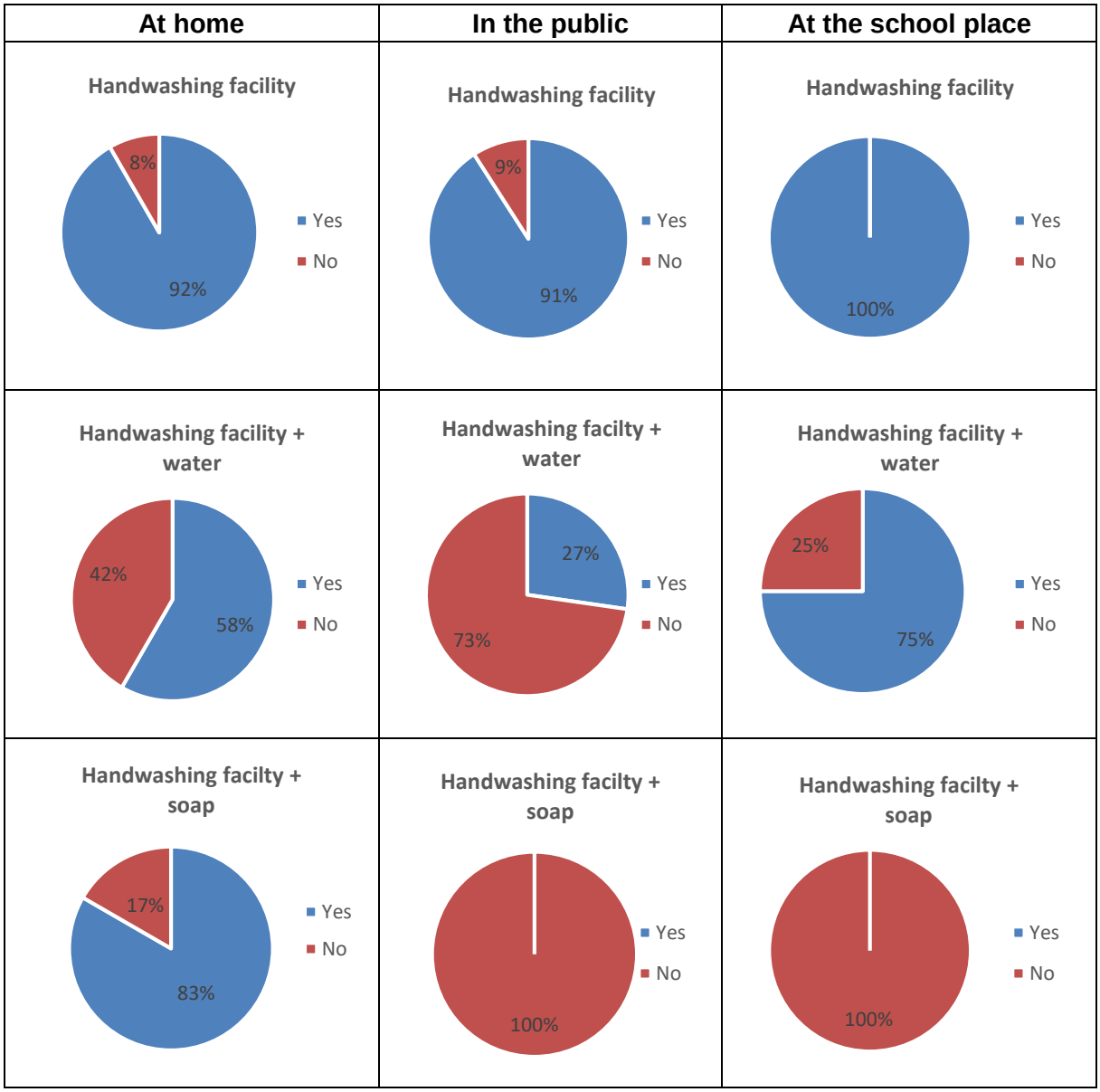

Figure 10: Results of the questionnaires on hygiene

5.2 Evaluation

To classify drinking water service as “safely managed”, drinking water needs to be: “Drinking water from an improved water source which is located on premises, available when needed and free from fecal and priority chemical contamination” (WHO 2017b).

For the district of Tupicocha 316 out of 442 households (71%) have connections to piped drinking water (INEI 2017a). If only census data is available, this may lead to the assessment that 71% of the households can be categorized as receiving “safely managed” drinking water.

The transect walk has provided new insight for the evaluation. The piped water comes from an unprotected source, and the only existing treatment, a chlorination unit is not always working.

With this information, it is possible to classify the water as not free of chemical and fecal contamination, as there is no treatment and therewith no guarantee for safe water. The estimation regarding drinking water services is hereby considered as “unimproved”.

To classify sanitation service as “safely managed” the following must be fulfilled: “Use of improved facilities[1] which are not shared with other households and where excreta are safely disposed in situ or transported and treated off-site” (WHO 2017). For the district of San Andrés de Tupicocha 222 out of 442 households (49%) are connected to a sewer system (INEI 2017b). However, the transect walk revealed that wastewater is not treated. The next classification level would be “basic” and the following must be fulfilled: “Use of improved facilities which are not shared with other households.

The sanitation services can be categorized as “basic”. Main reason for this is that excreta are not treated and therewith not “safely managed”. 75% of the students stated that it is drained into a sewer system hence no contact with humans and no infection risk. Nevertheless, the transect walk revealed that excreta are drained into a sewer system and untreated released in the nearby ponds and streams which are used for irrigation purposes. This poses an infection risk to humans. In view of this, it is questionable whether “basic” sanitation services are achieved, but rather “limited” sanitation services.

The handwashing service ladder consists of three categories “basic”, “limited” and “no facility”. The deceive factor to reach “basic” hygiene conditions is the presence of a handwashing facility, water and soap. The available census data does not include data on the presence of handwashing facilities or soap. However, the transect walk revealed, that no soap was present at the examined public facilities and at the school facilities.

The data gathered during the transect walk is not sufficient to classify the situation of the whole district of San Andrés de Tupicocha, but it does give a first impression. As no census data on hygiene are available, the evaluation of the hygiene service ladder for San Andrés de Tupicocha resulted in "limited", on the basis of the results collected during the transect walk. Although there is nearly always a handwashing facility available, either water or soap are not present.

[1] 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.

6 Conclusions and Outlook

The transect walk has proved to be a valuable instrument in collecting information which goes beyond survey data from national censuses. The tension between the continued monitoring over decades and the need for new indicators with short intervals to match policy cycles is strong. From this point of view, a transect walk could be helpful as it is easy to perform.

Nevertheless, the possibility to gather data with a transect walk is limited, and an uncertainty of the validation of the data remains as the walk is conducted with a small group of people whose observations are used for a representation of the local situation.

Therefore, findings must be viewed with caution, as most data gathered through the transect walk are personal observations of a single day. During the walk no data on chemical or biological contaminations were collected, except for simple measurements like turbidity. Still, it was possible to classify the water as not safe. This classification was made on the basis of reported cases of illness, the non-functioning chlorination and the practiced precautions such as boiling of water in the households.

To conduct a transect walk with local residents, already established good relationships are important as well as the willingness of locals to participate and to share valuable information during the walk. In order to collect data, good preparation is important. It is necessary to determine which data should be collected and how this information should be documented. As this experience has shown, the participants showed great interest and asked for more information and expressed the wish to be involved in the further course of the project.

In the case of San Andrés de Tupicocha, it would be imaginable that the school organizes a transect walk and participants record the progress and regressions once a year. The walk itself is an opportunity to increase participation of community members and to involve different stakeholders. It may be beneficial to invest in complementary qualitative data collection.

Regarding the local situation in San Andrés de Tupicocha, an additional transect walk, with participants such as, for example the JASS (Juntas Administradoras de Servicios de Saneamiento) and further local representatives responsible for water supply and sanitation, would be valuable. It would also be of interest to visit other places such as the Ururí reservoir.

The OHCHR (2012) point out that quantitative and qualitative analyses should be seen as helpful to complement each other. The qualitative information collected during the walk revealed circumstances, that cannot be revealed by analyzing official statistical data. The compilation of official quantitative statistical data and additional qualitative data of the transect walk delivered sufficient data for a preliminary assessment of SDG 6.1 using indicator 6.1.1 and of SDG 6.2 using indicator 6.2.1.

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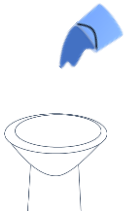
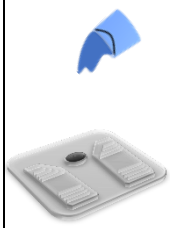
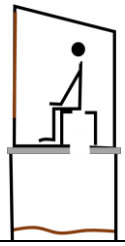
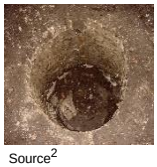
Annex

Questionnaires

Baños públicos – Lugar: _____

¿Qué tipo de inodoro es?

-						
					 Source[2]	 Source[3]
Las aguas residuales se dirigen a:				Pozo séptico	Al colector	otra

	Sí	**No**
¿El baño público es accesible todos los días de la semana y también durante la noche?		
¿Desde su percepción, el baño está en buen estado?		
¿Hay baños separados por sexo?		
¿Las puertas del baño tienen una cerradura que funciona?		
¿El inodoro está en buen estado y funciona?		
¿Hay papel higiénico?		
¿Los baños tienen luz que funciona?		
¿Hay lavamanos en el baño?		
¿Hay agua en el lavamanos del baño?		
¿Hay jabón en el lavamanos del baño?		
¿Hay algo para secarse las manos?		
¿Hay tachos de basura en los baños de mujeres?		
¿Los tachos de basura están dentro del cuarto del baño?		

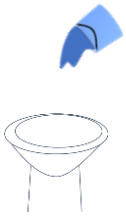
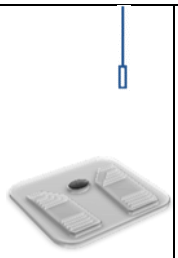
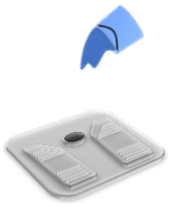
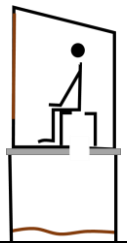
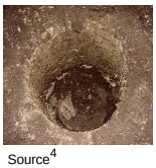
	Adecuado sin insectos, sin olor, sin suciedad	**Aceptable** pocos insectos, algo de tierra, ligero olor desagradable	**Insuficiente** orina o heces en el piso, malos olores, insectos
¿Qué tan limpios están los baños?			
¿Qué tan limpios están los lavamanos?			

¿Cuánto tiempo necesitas para ir del baño al lavamanos?		minutos

[2] Zefram 2006; File:Sickergrube.jpg; (CC BY 2.0 DE);
Available at: https://commons.wikimedia.org/wiki/File:Sickergrube.jpg; checked on 7/6/2020
[3] CambridgeBayWeather 2011; File:Honey bucket.jpg; (CC BY-SA 3.0)
Available at: https://commons.wikimedia.org/wiki/File:Honey_bucket.jpg; checked on 7/6/2020

Baños en el colegio – Lugar: _____

¿Qué tipo de inodoro es?

-						
					 Source[4]	 Source[5]
Las aguas residuales se dirigen a:				Pozo séptico	Al colector	otra

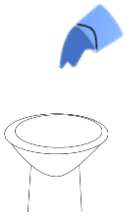
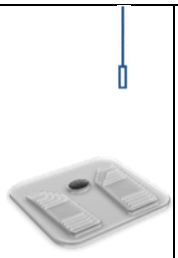
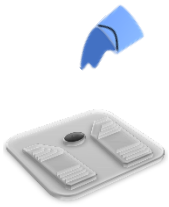
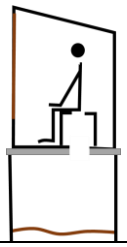
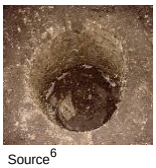
	Sí	**No**
¿El baño público es accesible todos los días de la semana y también durante la noche?		
¿Desde su percepción el baño está en buen estado?		
¿Hay baños separados por sexo?		
¿Las puertas del baño tienen una cerradura que funciona?		
¿El inodoro está en buen estado y funciona?		
¿Hay papel higiénico?		
¿Los baños tienen luz que funciona?		
¿Hay lavamanos en el baño?		
¿Hay agua en el lavamanos del baño?		
¿Hay jabón en el lavamanos del baño?		
¿Hay algo para secarse las manos?		
¿Hay tachos de basura en los baños de mujeres?		
¿Los tachos de basura están dentro del cuarto del baño?		

	Adecuado sin insectos, sin olor, sin suciedad	**Aceptable** pocos insectos, algo de tierra, ligero olor desagradable	**Insuficiente** orina o heces en el piso, malos olores, insectos
¿Qué tan limpios están los baños?			
¿Qué tan limpios están los lavamanos?			
¿Cuánto tiempo necesitas para ir del baño al lavamanos?			minutos

[4] Zefram 2006; File:Sickergrube.jpg; (CC BY 2.0 DE);
Available at: https://commons.wikimedia.org/wiki/File:Sickergrube.jpg; checked on 7/6/2020
[5] CambridgeBayWeather 2011; File:Honey bucket.jpg; (CC BY-SA 3.0)
Available at: https://commons.wikimedia.org/wiki/File:Honey_bucket.jpg; checked on 7/6/2020

Baños privados – Lugar: _____

¿Qué tipo de inodoro es?

					 Source[6]	 Source[7]
Las aguas residuales se dirigen a:				Pozo séptico	Al colector	otra

	Sí	**No**
¿Tiene baño en su casa?		
¿Su familia y sus vecinos usan el mismo baño?		
¿Solo su familia utiliza el baño?		
¿Prefiere utilizar el baño público o el baño de su casa?		
¿Desde su percepción el baño está en buen estado?		
¿El inodoro está en buen estado y funciona?		
¿Hay papel higiénico?		
¿El baño de su casa tiene luz que funciona?		
¿Hay lavamanos en el baño?		
¿Hay agua en el lavamanos del baño?		
¿Hay jabón en el lavamanos del baño?		
¿Hay algo para secarse las manos?		
¿Hay tachos de basura en el baño?		

¿Cuánto tiempo necesita para ir a un baño público?		minutos
¿Cuánto tiempo necesita para ir del baño al lavamanos?		minutos

	Adecuado	**Aceptable**	**Insuficiente**

_____

[6] Zefram 2006; File:Sickergrube.jpg; (CC BY 2.0 DE);
Available at: https://commons.wikimedia.org/wiki/File:Sickergrube.jpg; checked on 7/6/2020
[7] CambridgeBayWeather 2011; File:Honey bucket.jpg; (CC BY-SA 3.0)
Available at: https://commons.wikimedia.org/wiki/File:Honey_bucket.jpg; checked on 7/6/2020

	sin insectos, sin olor, sin suciedad	pocos insectos, algo de tierra, ligero olor desagradable	orina o heces en el piso, malos olores, insectos
¿Qué tan limpios están los baños?			
¿Qué tan limpios están los lavamanos?			

Agua Potable

¿Hay agua potable en la casa?

¿Cuántas horas a la semana o al día no hay agua en la casa?

¿Cómo percives el agua?	Muy bien	Bien	Mas o menos
El color			
El olor			
El sabor			

			Sí	**No**
¿Toma agua directamente del caño sin tratar?				
	Hervir	Clorar	Filtrar	Otra
En caso de que no: ¿Qué tipo de tratamiento le da antes de usarla?				

¿Qué miembro de la familia se encarga del tratamiento del agua potable?

¿En su familia, ha habido enfermedades que ustedes relacionaron con el consumo de agua potable?

¿Qué tipo de instalaciones sanitarias hay en la casa?						
Ducha	Tina	Lavamanos	Inodoro	Cilindro	Otra	

¿Qué tipo de usos le da al agua en su casa?						
Beber	Cocinar	Aseo	Personal	Limpieza	Regar	Otra