Post Bridge Building Assessment

Report

August 2024

Transformative Rural Access for Improved Livelihood (TRAIL)

South South Cooperation Unit/ Helvetas

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Executive Summary

This report presents the findings of a post-construction assessment conducted in Amhara region, Ethiopia, to assess the utilization of the trail bridges constructed through the Transformative Rural Access for Improved Livelihoods (TRAIL).

The study sampled 4 Short Span Trail Bridges (SSTB) – Gazo bridge, Kitara bridge, Misku bridge, and Marwuha bridge – 33% of the total number of bridges constructed by TRAIL in the region. A mixed method approach, consisting of both qualitative and quantitative methods, was applied. This included, the household survey of 169 households, 12 Key Informant Interviews (KII) with health extension workers, principles/teachers, agricultural extension providers, and a two-day traffic count at all the bridge sites.

The study findings indicated that trail bridges have saved lives and property. Prior to their construction, 10.5% of households reported fatalities while crossing rivers, while 18% of households reported the loss of cattle and goods. Since their construction, an average of 175 people use the bridges daily, with slightly more men (54%) using the bridges compared to women (46%). Twice as many people were recorded to be using the bridges on “market days” compared to “non-market days”. Overall, the bridges were primarily used to access markets and earn income.

In terms of livelihoods, the majority of the sampled households (74.5%) continue to be reliant on farming as their main source of income, but, for 12% of the respondents, they now have additional sources of income due to the year-around access provided by the bridges. Overall, a 6% increase in household income was documented, mostly due to the cash earned from starting “petty trade” and greater opportunities for wage labor.

Villagers also now have better access to health facilities, resulting in faster treatment and safer deliveries. An average of 25 minutes was saved for a one-way journey during the rainy season. There was an increase of 17% of patients seeking treatments and safer births at formal delivery centers increased by 31.5%. Trail bridges have also been essential to provide safer access to schools, while crossing rivers and also against the threat of rape and robberies while taking long detours/journeys. Travel time has also decreased by an average of 19 minutes for primary schools and 17 minutes for secondary schools for one-way journeys. Consequently, school attendance has increased and teachers report that students have more energy for their studies.

The highest time savings were recorded for accessing markets, with an average of 52 minutes saved for one-way and year-round access ensured. This has led to increased household incomes due to the increased opportunities for households to earn additional income. Farmers also now have reliable and easy access to farm inputs and are able to receive services from agricultural extension workers, leading to an improvement in their incomes. Travel time has also decreased by an average of 26 minutes (one-way).

Almost all the respondents valued the trail bridges, with the majority prioritizing the convenient access provided as being the most important for them. Maintenance of the bridges was however only conducted regularly at one trail bridge site (Gazo), where there was a functional Bridge Maintenance Committee (BMC), which collected maintenance fees from the community. This is despite 72% of the respondents stating that they were willing to provide maintenance fees, but in actuality only 25% had been paying, mostly for the Gazo bridge. For the remaining, the lack of “platform for payment” was the main reason (65%) for not contributing towards maintenance, followed up by maintenance fees “not being requested”. BMCs had also been established in Kitara and Maruwha, but at these two sites, the respondents were less positive in their functioning. This raises the question of why this disparity exists, and further study is needed to apply the learnings of effective maintenance from Gazo to the other sites.

A. Introduction

1. Background

People living in the highlands of Ethiopia, which constitute 45% of the country's total land area, face daily struggles to access basic services and markets due to the harsh terrain and inadequate rural infrastructure, such as roads and bridges. These difficulties are further exacerbated during the rains, when flash floods isolate entire villages. With people either cut-off or having to risk their lives by swimming across rivers. Tragically, many have lost their lives. Property, such as cattle, is also lost frequently due to the lack of a safe river crossing.

The construction of bridges is therefore highly needed and valued in Ethiopia, including in the Amhara region, where 62 trail bridges have been constructed to date. Presently, the Transformation of Rural Access for Improved Livelihoods (TRAIL) project (2022-2025), jointly implemented by Helvetas Ethiopia and Bridges to Prosperity, has already built 12 trail bridges in the region and the target is to construct an additional 17 by the end of the project phase.

This report presents the findings of a post-construction assessment conducted to assess the utilization of the trail bridges and their outcomes.

2. Objectives

The Post Bridge Building Assessment (PBBA) was conducted in July-August 2024 by Helvetas Ethiopia.

The main objectives of the study were:

1. To examine the extent to which the project's objectives have been achieved in improving access to basic services (education, health, market, & agricultural inputs)
2. To assess the contribution of trail bridges on lives and properties saved, and travel time reduced to access basic services such as school, health, market access, and agricultural inputs.
3. To analyze the effectiveness of well-functioning bridge user and management committees in mobilizing and organizing bridge users to pay for post-construction services.
4. To understand the beneficiary perceptions on the main benefits of the trail bridges.
5. To examine changes in student attendance at schools located across rivers post-bridge construction.
6. To analyze the increase in patient visits to health facilities across rivers following trail bridge construction.
7. To determine the pedestrian daily traffic volume and utility of bridges on selected trail bridge sites.

3. Scope

The study sampled four Short Span Trail Bridges (SSTBs) which were completed during TRAIL in 2023 – Gazo trail bridge, Kitara trail bridge, Misku trail bridge, and Marwuha trail bridge – which are located across the region and have varying degrees of remoteness (Table 1.1). Overall, these bridges constitute 33% of the total bridges constructed in Amhara by TRAIL.

Table 1.1: Salient features of the sampled trail bridges

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge
Span (in m)	80	65	75	120
Type	Suspended	Suspended	Suspended	Suspended
Bridge Cost (in Birr)	5.73 m	4.24 m	4.28 m	6.49 m
Year of bridge completion	2023	2023	2023	2023
Distance from nearest road head	11.6 km	22 km	0.5 km	11 km
Distance from nearest Kebele/Woreda headquarters	26.7 km	22 km	1.5 km	23.5 km
Main reason for constructing trail bridge	Access to basic	Access to basic	Access to basic	Access to basic services
GPS coordinates:				
Latitude	11.639638	12.40085667	12.7799015	10.9597942
Longitude	39.087391	38.8421994	38.8020697	38.327814
Elevation	2445	1955.1	1435.5	2483.005

4. Methodology

The study employed a mixed method approach, by applying both qualitative and quantitative methods of data collection to obtain relevant data in the field. This was done to triangulate the study findings and enhance the accuracy and reliability of the information collected.

The study applied three tools (refer Annex 1-3):

1. **Household survey:** with direct beneficiaries of the trail bridges)
2. **Traffic counts**: at all the bridge sites
3. **Key Information Interviews: with** health extension workers, principle/teachers, agriculture extension providers

A total of five research enumerators, who have experience in mobile data collection (Kobo) were recruited and trained by the Helvetas MEAL team on the above-mentioned tools (questionnaires, checklists) and then mobilized to the bridge sites. Unfortunately, due to security concerns, only four were able to complete

data collection, with one enumerator unable to reach bridge site. For those who were able to reach the bridge sites, a total of 11 days was spent collecting data.

4.1. Household survey

a. Sample size

A total of 169 households were sampled from the four bridge sites. Lesser number of households were sampled than previously planned due to the sudden change in the security conditions, which meant that Megech had to be dropped. Consequently, with a smaller sample size, the confidence level of household survey is 90% with 6.27% margin of error.

Table 1.2: Bridge beneficiaries and sample size

SN	Administrative zone	District	Bridge Site name	No. of bridge users Kebeles	Bridge beneficiaries (HHs)	Sample size (HH)
1	North Wollo	Wadila	Gazo bridge	2	393	42
2	Wag-himira	Wag-himira	Kitara bridge	2	4,765	42
3	Wag-himira	Wag-himira	Misku bridge	2	3,843	43
4	East Gojjam	Enebsie Sarmidir	Marwuha bridge	2	1,055	42
			Total	**10**	**10,056**	**169**

b. Sampling procedure

A two-stage cluster sampling procedure was applied for the household survey:

First, the sample administrative zones, districts and bridge sites were selected using purposive sampling technique. Agro-ecological and current security situation were the main criteria to select sample bridge sites. Furthermore, from each bridge site two kebeles- the smallest administrative unit were selected based on their proximity to the bridges.

Then, the final sampling unit was households, from the list of households in the bridge catchment areas, the required samples was selected using systematic random sampling technique. From each bridge site 42 households (21 for each Kebele) were selected systematic random sampling technique.

4.2. Traffic counts

A two-day traffic count was conducted at each of the four sampled sites, ensuring that one of the days was a market day. The decision to conduct the traffic count for two days (instead of a week) was due to security concerns and budget restrictions. At the bridge sites, enumerators were present from 8 am to 5 pm to capture the different bridge users.

4.3. Key Informant Interviews

A total of twelve Key Informant Interviews (KII) were conducted at the bridge sites, ensuring that at least one principle/teacher, one health extension worker, and one agricultural extension worker was interviewed from each bridge site. The interviews were conducted to collect qualitative information gain a more nuanced understanding of how the bridges had affected the lives and livelihoods of the beneficiary populations.

5. Data analysis

The data collected through KOBO and converted to an excel file. This formed the basis of analysis as the dataset was of a small size and only basic comparative statistical analysis (frequency, means, percentages, standard deviations) were required.

6. Limitations of the study

- The security situation in Amhara along with budgetary constraints limited the sample size of the population from the selected bridge sites. This has resulted in a larger margin of error, which suggests less accuracy of the findings. With a small sample size, the impact of outliers also becomes more pronounced and may skew the results. To mitigated these anticipated limitations, households were randomly sampled to minimize biases.

- Conducting the traffic counts for only two days instead of seven, which is generally the norm for an average daily traffic count, may also have led to some bridge users' not being captured during the two-day count. Hereto, the study sought to minimize the limitations by ensuring that at least one of the traffic count days was a market day and one a school day.

B. Key Findings

1. Respondent profile

On average, one trail bridge is benefiting 2,514 households. From these beneficiaries, a total of 169 households were sampled for the study. Amongst which, 45.5% were female and 54.5% male. These figures are comparable with the national figures of 49.7% for female and 50.3% for male for Ethiopia, but more so reflect the availability of the respondents during the day of the survey. Female-headed households meanwhile constituted 13% of the total sampled households, which is less than the national figure of 22.1% (World Bank, 2019[1]).

Table 2.1: Respondent profile (in percentage)

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
Male	90.5%	24%	51%	52.5%	54.5%
Average age of male respondents	43.2 years	45.1 years	35.4 years	44 years	41.7 years
Female	9.5%	76%	49%	47.5%	45.5%
Average age of female respondents	41.5%	39.5 years	28.3 years	38.4 years	36.3 years
Female-headed Households	9.5%	16.5%	9.3%	16.5%	13%

2. Livelihood sources and income

Prior to the construction of the trail bridges, farming was the main source of household income for the majority (74.5%) of the respondents, followed by Wage labor for 22%, and Petty Trade (buying and selling wood, charcoal, vegetables) for 3.5%.

Table 2.2: Household livelihoods prior to trail bridge construction

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
A. Main HH livelihood sources					
1. Farming	100%	98%	25.5%	76%	74.5%
2. Livestock rearing	-	-	-	-	-
3. Wage labor	-	2%	70%	14%	22%
4. Petty trade	-	-	4.5%	10%	3.5%
B. Different sources of HH livelihood					
1. Multiple sources	52%	7%	30%	81%	43%
2. Single source	48%	93%	70%	19%	57%

[1] Source: https://data.worldbank.org/indicator/SP.HOU.FEMA.ZS?locations=ET

Most (57%) had a single source of income compared to 42% which had multiple sources. But interestingly, at two of the bridge sites (Kitara and Misku), an overwhelming majority relied on either farming or wage labor for their livelihoods, while in Marwuha it was the opposite, with the majority having multiple sources of livelihood options, due to closer proximity to local markets and fertile lands.

After trail bridge construction, farming still continues to be the main source of household income for the majority (74.5%) of the respondents. However, a 12% increase was recorded for households now having additional sources of livelihood options. This was primarily recorded in Gazo and Misku (Table 2.3.). Most (50%) noted that they had now started "Petty Trades" for additional income, which had been facilitated by the safer and year-round access provided by the trail bridges. The opportunity to earn income from wage laborer (20%) was also recorded at Gazo and Kitara. Interestingly, rearing of livestock was also noted at only one site at Gazo.

- Farming is the main source income for 74.5% of HHs
- 12% of HHs have additional sources of income after trail bridge construction
- 6% increase in HH income after trail bridge construction

Table 2.3: Household livelihoods after trail bridge construction

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
A. Main HH livelihood sources					
1. Farming	98%	98%	28%	76%	74.5%
2. Livestock rearing	2%	-	-	-	0.5%
3. Wage labor	-	2%	67%	17%	22%
4. Petty trade	-	-	5%	7%	3%
B. Different sources of HH livelihoods after trail bridge construction					
1. Multiple sources	64%	10%	40%	83%	43%
2. Single source	36%	90%	60%	17%	57%
C. Changes in livelihood options for HHs which previously only had a single source					
1. HHs which now have additional livelihood sources	21%	2%	14%	2%	12%
D. New livelihood sources for HHs which previously had only single source					
1. Farming	-	25%	17%	-	10%
2. Livestock rearing	33%	-	-	-	15%
3. Wage labor	33%	25%	-	-	20%

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
4. Petty trade (selling crops, wood)	23%	50%	83%	100%	50%
5. Others	11%	-	-	-	5%

The average household incomes before and after trail bridge construction were recorded to be 60,983 Birr (USD 1,053) and 64,669 Birr (USD 1,117) respectively. **After trail bridge construction, household incomes increased by 6%**, with the highest recorded at Gazo followed by Marwuha (Table 2.4). Overall, the decrease in standard deviation after the construction of the trail bridge also suggests that improved access provided by the trail bridges helped to reduce income disparity amongst the sampled households.

Table 2.4: Household yearly incomes before and after trail bridge construction (in Birr)

	Before construction	After construction	Percentage change
1. Average HH income at Gazo bridge site	52,823	65,377	+ 23.7%
2. Average HH income at Kitara bridge site	51,238	51,952	+1.3%
3. Average HH income at Misku bridge site	89,563	91,987	+2.7%
4. Average HH income at Marwuha bridge site	49,652	54,438	+9.6%
5. Mean HH income	60,819	65,939	+6%
6. Standard deviation	16,635.98	15,861.85	

The reasons for the increase in household incomes vary and not all can be attributed to the enhanced connectivity provided by the trail bridges. However, when the respondents were asked for the main contributing factors – **48% reported that the year-round access to markets (especially during the rains), had led to them to being able to sell wood and crops at higher prices. A significant number (27.5%) also reported that the increased availability of agricultural inputs had led to increase in crops and incomes**.

Table 2.5: Reasons for the increase in household earning opportunities (no. of HHs)

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
1. Increased access to markets to sell wood, crops at higher rates	36.6%	-	46.6%	83.4%	48%
2. Increase in access to agricultural inputs	30%	-	40%	8.3%	27.5%
3. Greater opportunity to access labor for farming	10%	-	-	-	5%
4. Greater opportunities to earn through wage labor	3.4%	100%	13.4%	-	6.8%
5. Farm lands easily accessible	13.4%	-	-	-	6.8%
6. Ploughs can be taken across	6.6%	-	-		3%
7. Improved irrigation	-	-	-	8.3%	3%

Note: Percentages are column percentages

3. Trail bridge outcomes

3.1. Saving lives and property

Trail bridges have saved lives and property by preventing deaths and the loss of goods while crossing rivers.

Respondents at three of the sampled bridge sites (10.5% of the total respondents) reported to have lost a family member when they were swept away by river currents or slipped from rudimentary bridges while trying to cross rivers. Amongst the sampled bridges, the highest deaths were recorded at Gazo bridge site, with 38% of the respondents there stating that they had lost a family member.

This was corroborated by the Heath Extension Worker during Key Informant Interviews (KII), who stated that 85 people had died due to the lack of a safe crossing and that prior to the construction of the trail bridge and that villagers were risking their lives daily.

- 10.5% of HHs reported deaths of family members before trail bridge construction
- 18% of HHs reported loss of property before trail bridge construction

Loss of goods and property were also recorded at 18% of the total sampled sites. These included livestock (goats, sheep, donkeys, ox) for 11.8% of the sampled households, which suffered losses amounting to on average of 11,100 Birr, and farm products (crops, fertilizers) for 6% of the households, which amounted to an average 3,450 Birr.

Table 2.6: Loss of lives and property before construction of trail bridges (HHs)

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
A. Loss of lives before trail bridge construction					
1. Deaths while crossing rivers before trail bridge construction	38%	2%	0	2%	10.5%
2. Immediate family members (children, mother, brother) who died	9.5%	-	-	-	2%
3. Relatives (aunt, uncle) who died	28.5%	2%	-	2%	8%
B. Loss of property while crossing before trail bridge construction					
1. Loss of property while crossing the river	52%	-	11.5%	7%	18%
2. Farm products lost during crossing	24%	-		-	6%
3. Average cash equivalent of farm product lost (Birr)	3,450	-		-	3,450
4. Livestock lost during river crossings	26%	2%	11.5%	7%	12%
5. Average number of livestock lost by a HH	2 (highest 5)	1 (highest 1)	4 (highest 8)	6 (highest 8)	
6. Average cash equivalent of livestock lost (Birr)	7,000	8,000	14,400	15,000	11,100

3.2. Utility of the trail bridges

The average traffic count at the sampled bridge sites was 175 persons per day. Twice as many people were using the trail bridges during the "market days" than "non-market days". With slightly more men (54%) using the bridges than women (46%) overall.

Unsurprisingly, the majority of the users using the bridge were adults in their early (15-24 years) and prime working ages (25-54 years) during both "markets" (85%) and "non-market" (79%) days; which reflects the utility of the bridges, which are used more for income generating activities. During the "market days", 87% of the bridge users, both men and women, were using the bridges to reach markets to buy and sell goods. Meanwhile, during the "non-market" days, the usage of the bridges was more diverse, with people crossing to access agricultural inputs/farmlands (38%), followed by income generating activities (21%), and social reasons (going to meet family/friends) at 20%.

- On average 175 people use the bridges daily
- Twice as many people use the bridges on market days than non-market days
- 54% of men use the bridges compared to 46% women
- Bridges were primarily being used to access markets and earn income

Table 2.7: Traffic counts by sex

		Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total	%
Number of people who use the bridges							
1. Market day	**Men**	62	140	171	105	478	49%
	Women	39	63	103	289	494	51%
	Total	101	203	274	394	972	
	Average daily traffic during market day					**243**	
2. Non-market day	**Men**	35	62	115	64	276	64%
	Women	13	20	75	45	153	36%
	Total	48	82	190	109	429	
	Average daily traffic during non-market day					**107**	

Table 2.8: Traffic counts by age

		Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total %
Age-wise disaggregation of trail bridge users						
1. Market day	**< 14 years**	1%	1%	16.5%	0.5%	7%
	15-24 years	26%	30.5%	43%	35%	35%
	25-54 years	64%	60%	35.5%	53.5%	50%
	55-64 years	6%	6.5%	3%	8%	6%
	< 65 years	3%	2%	2%	3%	2%
	Total	100%	100%	100%	100%	100%
2. Non-market day	**< 14 years**	2%	1%	25.5%	9%	13%
	15-24 years	12.5%	25.5%	30.5%	26%	26%
	25-54 years	81%	60%	42%	48.5%	53%
	55-64 years	4.5%	10%	0	9%	5%
	< 65 years	0	3.5%	2%	7.5%	3%
	Total	100%	100%	100%	100%	100%

Amongst the sampled trail bridges sites, the villagers at Gazo bridge, faced the most difficulties as during the rainy season, health facilities and secondary schools were inaccessible (discussed further in section 3.3 and 3.4). The construction of the trail bridge was therefore regarded as being extremely beneficial, with the principle remarking that the bridge is the “life of Gazo”. For the other sites, respondents noted the need of have to travel long distances/take detours to access schools and health facilities.

When disaggregated by sex, the data indicated that while there was an equal distribution of men and women accessing markets during the market days, for the non-market days, nearly twice as many men were using the bridges compared to women for all activities. Indicating that men are more active in the public sphere than women.

Table 2.9: Traffic counts by trail bridge usage during market days

		Sex	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total %
Reason for crossing trail bridges							
1. Market day	**Market access**	M	60%	57%	57%	17%	40%
		W	35%	27%	39%	65%	47%
	Agricultural input/farm access	M	4.5%	4%	-	7%	4%
		W	-	1%	-	6%	3%
	Health access	M	-	1%	-	-	0.5%
		W	1.5%	1%	-	1%	1%
	Social reason	M	-	3.5%	-	2.5%	2%
		W	-	1.5%	1%	1%	1%
	School access	M	-	-	-	-	-
		W	-	2%	-	-	0.5%
	Religious reason	M	-	-	-		
		W	-	2%	-	0.5%	1%
	Income earning (Work, collecting wood Begging)	M	-	-	-	-	-
		W	-	-	3%	-	8
	Others	M	-	-	-	-	-
		W	-	-	-	-	-

Table 2.10: Traffic counts by trail bridge usage during non- market days

		Sex	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total %
Reason for crossing trail bridges							
1. Non-market day	**Market access**	M	32%	18%	2%	3%	10%
		W	13%	4.5%	1%	5.5%	5%
	Agricultural input/farm access	M	24%	21%	14%	33%	23.5%
		W	-	2.5%	4%	37%	14.5%
	Health access	M	4.5%	8%	-	4%	3.5%
		W	4.5%	-	-	0.5%	1%
	Social reason	M	11%	28%	6%	8%	12.5%
		W	11%	17%	2%	5.5%	8%
	School access	M	-	-	-	-	-
		W	-	1%	-	-	1%
	Religious reason	M	-	-	-	-	-
		W	-	-	-	-	-
	Income earning (Work, collecting wood, Begging)	M	-	-	53%	0.5%	16%
		W	-	-	18%	-	5%
	Others	M	-	-	-	-	-
		W	-	-	-	-	-

Overall, 87.5% of the respondents were traveling on foot to access the various markets, social services and income opportunities. This was followed by usage of pedestrian travel and motorbikes (10%) and only a small number (2.5%) were using public transport.

3.3. Access to health facilities

Villagers now have year-round access to health facilities, resulting in faster treatment and safer deliveries. An average of 25 minutes for one-way was saved by the trail bridges during the rainy season. While there was an increase of 17% of patients seeking treatment and safer births increased by 31.5%.

- 25 minutes saved to reach health facilities during rainy season for one-way travel
- 17% increase in patients seeking treatment from health facilities
- 31.5% increase of safe births at health facilities

Prior to the construction of the trail bridge the closet health facilities were directly accessible throughout the year to only 4% of the households. The remaining households needed to either take long detours to reach the facilities (23.5%) as the closet one was inaccessible, take detours during the rainy season (27.5%), or wait for the rains to stop/water levels to reside (25%)

Table 2.11: Access to health facilities (HHs)

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
A. Access to health facilities before trail bridge construction					
1. Access only during the dry season (completely isolated during rainy season)	100%	-	-	-	25%
2. Need to take long detours throughout the year	-	7%	100%	-	27.5%
3. Limited access during rainy season	-	-	-	98%	20%
4. Need to take long detours during rainy season	-	93%	-	2%	23.5%
5. Accessible throughout the year	-	-	-	-	4%
B. Access to health facilities after trail bridge construction					
1. Accessible throughout the year	100%	100%	100%	100%	100%

Trail bridges saved on average 25 minutes for one-way travel during the rainy season and 15 minutes during the dry season to access health facilities. In the case of Gazo trail bridge site, the bridge was essential for prompt treatment, as prior to its construction the health facility was inaccessible to

villagers from across the river bank and hence as a result, they had to travel long distances to receive treatment.

Table 2.12: Average one-way travel time to health facilities* (in mins)

		Kitara bridge	Misku bridge	Marwuha bridge	Average time
1. Travel time to health facility before trail bridge construction	Dry season	118.53	64.18	128.09	103.60
	Rainy season	158.78	75.46	182.73	138.99
2. Travel time to health facility after trail bridge construction	Dry season	110.48	32.67	120.7	87.95
	Rainy season	144.39	44.88	152.8	114.02
3.Time saved by trail bridge	Dry season	**8.05**	**31.51**	**7.39**	**+15.65**
	Rainy season	**14.39**	**30.58**	**29.93**	**+24.97**

Note: Figures for Gazo trail bridge have not been included in the above calculations as the health facility was not accessible during the rainy season before trail bridge construction.

Since the construction of the trail bridges, **the majority (96%) of the respondents are now preferring and having the birth of their babies at formal health facilities. This practice has increased by 76% since the construction of the trail bridge**, and represents a major change in birthing practices, which has undoubtedly led to safer deliveries. This is corroborated by the **figures from the health facilities which shows that births at the formal centers have increased by 31.5% since the construction of the trail bridges.**

Health service providers[2] during KIIs also noted that it is now much easier for expectant mothers to reach the facilities. They stated that before, mothers were either forced to give births at their homes due the inability to reach the health facility during the rains or even along roads, while traveling long distances to access facilities, when the nearest facility was inaccessible due to the lack of a safe crossing. Tragically, deaths have also occurred. With a health worker at Kitara bridge site stating that the death of a pregnant woman could have been avoided had she been able to reach the center during the rains.

Table 2.13: Home births versus births in health facilities (HHs)

		Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
1. Before trail bridge	Home births	83%	14%	35%	50%	45.50%
	Births at health facilities	17%	86%	65%	50%	54.50%
2. After trail bridge	Home births	5%	-	7%	7%	4%
	Births at health facilities	95%	100%	93%	93%	96%

[2] KIIs with health extension workers at Misku TB, Maruwha TB, Gazo TB

Table 2.14: Number of births at the health facility in the last year

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
1. Before trail bridge	45	168	8	96	317
2. After trail bridge	63	216	13	125	417
3. Increase in births at health facilities	+ 40%	+28.5%	+62.5%	+30%	+31.5%

Overall, **a 17% increase in the number of people coming to the health facilities** was recorded at the sampled sites after trail bridge construction indicating how the enhanced access provided by bridges have contributed towards increased treatments. Comparatively, more women (73%) were recorded to have come to the centers than men.

In addition to the services received by patients, health extension workers also shared that the bridges had allowed them to provide prompt services and widen their outreach (during vaccination drives). One health worker at Kitara bridge reported how the risks of robberies while traveling to villages, when long detours needed to be taken due to the lack of a bridge, are no longer a worry to him and his colleagues anymore.

Table 2.15: Patients seeking treatment from health facilities before and after trail bridges

	Before trail bridge construction			After trail bridge construction		
	Men	Women	Total	Men	Women	Total
Gazo bridge	78	130	208	125	160	285
Kitara bridge	1,414	5009	6,423	1,632	5,541	7,173
Misku bridge	20	40	60	40	80	120
Marwuha bridge	340	407	747	525	605	1,130
Total	1,852	5,586	7,438	2,322	6,386	8,708
% Change				+25%	+14%	+17%

3.4. Access to schools

Trail bridges have provided safer access, while crossing rivers and the threat against rape and robberies. Travel time has also decreased on average of 19 minutes for one-way travel to primary schools and 17 minutes for secondary schools. Consequently, school attendance has increased and students have more energy for their studies.

Prior to the construction of the trail bridge, only 41.5% households had access to primary schools throughout the whole year. For the remaining, they had to travel long distances/take detours throughout the whole year or during the rains (29%), or the school was only reachable during the dry season (19.5%), such as at the Kitara bridge site (Table 2.16). Reaching secondary schools posed similar problems, whereby only 17% households had year-round access. While 29% of households could only access them during the dry season (Table 2.17).

- All schools are now accessible year-round compared to 17% for secondary schools and 41.5% for primary schools
- On average 19 minutes for primary schools and 17 minutes for secondary schools has been saved for one-way journeys

Interviews with the teachers revealed that it was dangerous for students and teachers to cross the rivers during the rainy season, and so **students (at Kitara and Gazo) would be forced to miss 2-3 months of schooling**. Many also noted that absenteeism was. Students were also at risk of car accidents when they had to take detours. Alarmingly, **girls were at also at risk of being raped due to the long distances/detours that they had to travel** due to the lack of a safe crossing. Teachers also faced the similar difficulties, with a few at the Kitara bridge site sharing that they had been robbed of their salaries in the past.

Table 2.16: Access to primary schools (HHs)

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
A. Access to health facilities before trail bridge construction					
1. Access only during the dry season (completely isolated during rainy season)	-	78.5%	-	-	19.5%
2. Need to take long detours throughout the year	-	-	93%	-	24%
3. Limited access during rainy season	5%	-	-	36%	10%
4. Need to take long detours during rainy season	-	21.5%	-	-	5%
5. Accessible throughout the year	95%	-	7%	64%	41.5%
B. Access to health facilities after trail bridge construction					
1. Accessible throughout the year	100%	100%	100%	100%	100%

Table 2.17: Access to secondary schools (HHs)

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
A.Access to health facilities before trail bridge construction					
1. Access only during the dry season (completely isolated during rainy season)	100%	-	-	14%	29%
2. Need to take long detours throughout the year	-	45%	42%	-	22%
3. Limited access during rainy season	-	-	-	71.5%	18%
4. Need to take long detours during rainy season	-	57%	-	-	14%
5. Accessible throughout the year	-	-	58%	14.5%	17%
B. Access to health facilities after trail bridge construction					
1. Accessible throughout the year	100%	100%	100%	100%	100%

The construction of the trail bridges has therefore been extremely valuable for students and teachers. **A 48% increase has also been noted at three of the sampled sites,** and while the reason for this rise cannot be solely attributed to the access provided by trail bridges, interviews with the teachers indicates that this is one contributing factor, as parents are no longer worried about sending their children to schools across the river banks and they no longer have to travel long distances. They also shared that since the students have less strenuous journeys, they are more energetic and perform better in their studies.

Table 2.18: Number of students enrolled in the nearest school

		Gazo bridge	Kitara bridge	Misku bridge	Total
1. Before trail bridge	Boys	12	81	8	101
	Girls	17	59	12	88
	Total	**29**	**140**	**20**	**189**
2. After trail bridge	Home births	18	72	23	113
	Births at health facilities	27	96	45	168
	Total	**45**	**168**	**68**	**281**

Note: Schools in Marwuha have been closed due to the conflict

In addition to the safer access, **on average 19 minutes for a one-way journey has been saved in accessing primary schools and 17 minutes for secondary schools.**

Table 2.19: Average one-way travel time to schools* (in mins)

		Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Average time
A. Primary schools						
1. Travel time to primary school before trail bridge construction	Dry season	18.80	54.52	46.75	14.88	33.73
	Rainy season	19.52	77.85	57.62	17.14	43.03
2. Travel time to primary school after trail bridge construction	Dry season	18.75	55.00	27.50	14.64	28.97
	Rainy season	19.60	77.75	38.62	14.88	37.71
3. Time saved by trail bridge	Dry season	No change	No change	+19.25	No change	+19.25
	Rainy season	No change	No change	+19.00	No change	+19.00
B. Secondary schools						
1. Travel time to primary school before trail bridge construction	Dry season	258.57	113.09	58.25	111.47	135.34
	Rainy season	Not accessible	151.90	69.18	160.47	127.18
2. Travel time to primary school after trail bridge construction	Dry season	253.17	106.66	56.30	111.78	131.97
	Rainy season	288.29	140.00	66.46	137.14	157.97
3. Time saved by trail bridge	Dry season	No change	+6.43	Negligible	No change	+6.43
	Rainy season	Now accessible	+11.9	Negligible	+23.33	+17.61

3.5. Access to markets

Trail bridges have saved on average 52 minutes for a one-way journey and ensured year-round access to markets. This has led to increased household incomes due to the increased opportunities for households to earn additional income.

Only 22% of the respondents had year-round access to markets prior to the construction of trail bridges. The remaining had limited access during the dry season or had to take long detours to reach markets (Table 2.20). The access provided by trail bridges was therefore extremely beneficial to the villagers. With the benefits most noticeable at Gazo bridge site, where villagers reported that they could only access the nearest marker during the dry season.

- Average of 52 minutes saved by trail bridges to access markets for a one-way journey

According to the respondents, the increased access to markets has led to households having the opportunity to gain additional income by selling wood and crops at higher rates (refer section 2: Household incomes).

Table 2.20: Access to markets (HHs)

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
A. Access to markets before trail bridge construction					
1. Access only during the dry season (completely isolated during rainy season)	100%				25%
2. Need to take long detours throughout the year		33%	100%		34%
3. Limited access during rainy season				95%	17%
4. Need to take long detours during rainy season		67%		2%	2%
5. Accessible throughout the year				3%	22%
B. Access to markets after trail bridge construction					
1. Accessible throughout the year	100%	100%	100%	100%	100%

Furthermore, **time was also saved by the bridges, with 52 minutes being saved during the rainy season and 41 minutes during the dry season.**

Table 2.21: Average one-way travel time to markets* (in mins)

		Kitara bridge	Misku bridge	Marwuha bridge	Average time saved
1. Distance to markets before trail bridge construction	Dry season	117.85	58.25	254.40	143.50
	Rainy season	157.85	69.65	311.07	179.52
2. Distance to markets after trail bridge construction	Dry season	109.28	25.11	172.26	102.22
	Rainy season	143.09	35.23	204.40	127.57
3.Time saved by trail bridge	Dry season	8.57	33.14	82.14	41.28
	Rainy season	14.76	34.42	106.67	51.95

Note: Figures for Gazo trail bridge have not been included in the above calculations as the market was not accessible during the rainy season before trail bridge construction.

3.6. Access to agricultural inputs

Trail bridges have enabled villagers to have year-round access to agricultural inputs, compared to just 13% prior to bridge construction. Travel time of an average 26 minutes has been reduced. Consequently, farmers now have a reliable and easy access to farm inputs and are able to receive services from extension workers leading to an improvement in their incomes.

Only 13% of households had year-round access to agricultural inputs prior to trail bridge construction. With the majority having to travel long distances or had limited access (Table 2.22). As noted in section 3.1, many households also had lost property (farm inputs, cattle) while trying to swim across rivers in the past. Interviews with agricultural extension workers also noted that it was difficult for them to provide their services in a timely manner, especially during the rains.

- All households have year-round access to agricultural inputs compared to 26% prior to bridge construction
- Trave time has decreased by an average of 26 minutes for a one-way journey

Table 2.22: Access to agricultural inputs (HHs)

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total
A. Access to agricultural inputs <u>before</u> trail bridge construction					
1. Access only during the dry season (completely isolated during rainy season)	100%	-	-	2%	26%
2. Need to take long detours throughout the year	-	-	65%	-	16.5%
3. Limited access during rainy season	-	-	-	76%	19.5%
4. Need to take long detours during rainy season	-	100%	-	2%	25%
5. Accessible throughout the year	-	-	25%	17%	13%
B. Access to agricultural inputs <u>after</u> trail bridge construction					
1. Accessible throughout the year	100%	100%	100%	100%	100%

Since the construction of the trail bridges, there is now year-round access and the **travel time has also been reduced by an average of 26 minutes during the rainy season.** Agricultural extension workers also shared that while previously they had to prioritize Kebeles, which would be cut-off during the rains, for their services, now the situation is not so urgent and that they find it easier to perform their duties.

Table 2.23: Average one-way travel time to agricultural inputs* (in mins)

			Kitara bridge	Misku bridge	Marwuha bridge	Average time saved
3. Distance to agricultural inputs before trail bridge construction	Dry season	132.85	91.42	47.09	211.42	120.69
	Rainy season	Not accessible	128.33	57.90	285.71	157.31
4. Distance to agricultural inputs after trail bridge construction	Dry season	132.87	85.00	42.44	180.71	110.25
	Rainy season	151.71	115.71	53.83	245.71	141.74
3.Time saved by trail bridge	Dry season	No change	6.42	Negligible	30.71	18.56
	Rainy season	Now accessible	12.62	Negligible	40.00	26.31

Note: Negligible indicates less than 5 minutes

4. Community ownership

Almost all the respondents valued the trail bridges, with the majority prioritizing the convenient access provided as being the most important for them. Maintenance of the bridges was however only conducted regularly at one trail bridge site (Gazo), where there was a functional Bridge Maintenance Committee (BMC), which collected maintenance fees from the community.

Ninety-four percent of the respondents had a very good to good perception with regards to the benefits provided by the trail bridges. With the majority (64%) stating that the ease and convenience in crossing rivers and accessing services and employment opportunities was the main benefit that they prioritized (Tabel 2.24). A high majority 87% also viewed the trail bridges as a part of their community. Though in Misku and Marwuha, there were also some (13%) who did not feel much ownership. When cross checked with their usage of the trail bridges, it was seen that these households only used the bridges occasionally, for accessing health facilities.

- 94% valued the benefit of the trail bridge as being very good to good
- Convenient access was the main benefit derived from the bridges according to their perspective
- 87% viewed the trail bridges as a part of their community

Table 2.24: Community perception on trail bridge benefits (HHs)

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total %
A. Level of community awareness of the benefit of trail bridges					
1. Very good	83%	14%	35%	93%	56%
2. Good	17%	86%	42%	7%	38%
3. Fair	-	-	19%	-	5%
4. Poor	-	-	4%	-	1%
B. Main benefit from trail bridges					
1. Safety	9.5%	45%	9%	26%	23%
2. Time saved	-	26%	-	24%	13%
3. Convenience	90.5%	19%	91%	50%	64%
C. Ownership of trail bridges					
1. Very good	81%	31%	9%	86%	47%
2. Good	19%	69%	52%	7%	40%
3. Fair	-	-	35%	1%	9%
4. Poor	-	-	4%	4%	4%

Overall, there was also **high level (85%) willingness from the communities to prevent theft of parts and vandalism** of the trail bridges. When observed, all the bridges were in good condition. Primarily because they were all recently built. Furthermore, while **72% of the respondents were willing to pay for bridge maintenance only 25%, only those at Gazo bridge site, were contributing**. One reason for this was the functioning of the Bridge Maintenance Committee (BMC) at the site and the importance of the bridge for the majority of the villagers. At the remaining sites, households reported that there was either “no platform for making payments” (65%), i.e. there is no system in place for making payments or that they were “not asked” (35%).

- 72% of bridge users were willing to pay for bridge maintenance
- Households at only 1 bridge site were contributing towards bridge’s maintenance
- Main reason for not paying for maintenance fee was “not having a platform” to make the payments
- 51% of the respondents did not know who collected the maintenance fees
- Communities only perceived the establishment of BMCs at 2 bridge sites, with only 1 considered to be functioning well

Table 2.25: Community perception on trail bridge maintenance (HHs)

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total %
A. Community willingness to prevent theft and vandalism of the trail bridge					
1. Very good	88%	40%	16%	59.5%	51%
2. Good	12%	57%	49%	19%	34%
3. Fair	-	3%	25.5%	19%	12%
4. Poor	-	-	9.5%	1	3%
B. Community willingness to pay for bridge maintenance					
1. Very good	83%	14%	11.5%	26%	34%
2. Good	17%	74%	30%	36%	38%
3. Fair	-	9.5%	35%	2%	12%
4. Poor	-	2.5%	21%	36%	15%
5. Very poor	-	-	2.5%	-	1%
C. Households who have paid regularly for trail bridge maintenance					
1. Yes	100%	-	-	-	25%
2. No	-	100%	100%	100%	75%
D. Reason for not paying for trail bride maintenance					
1. I am not requested	-	100%	2.5%	5%	35%
2. There is no platform for payment	-	-	97.5%	95%	65%
E. Authority that collects maintenance fees					
1. Bridge user/ Management committee	69%	14%	-	47.5%	32.5%
2. Kebele admin office	28.5%	16.5%	-	9.5%	13.5%
3. Woreda Road Authority	-	7.5%	-	3%	3%
4. Don't know	2.5%	62%	100%	40%	51%
F. Decision maker for trail bridge repair and maintenance fee					
1. Bridge user/ Management committee	7%	-	-	31%	9.5%
2. Kebele admin office	0.5%	19%	-	12%	8%
3. Woreda Road Authority	4.5%	7%	9%	9.5%	8%
4. User committee	69%	14%	3%	26%	27%
5. Local community leader	19%	2	-	-	5.5%
6. Don't know	-	58%	88%	21.5%	42%

Overall, 60% of the respondents stated that a Bridge Maintenance Committees (BMC) had been established. Though besides the respondents in Gazo and Kitara, they did not know much about how they functioned and had varying understandings of who was in control and made decisions regarding maintenance. In Misku, none of those surveyed thought that a BMC had been formed. Meanwhile, only 38% stated that the BMCs were functioning well, indicating that besides the BMC in Gazo, this mechanism has not been effective in the other sites. Indicating, the need of further assessment to understand why the BMC at Gazo has been effective and to take those lessons to other bridge sites.

Table 2.26: Functioning of Bridge Maintenance Committees (HHs)

	Gazo bridge	Kitara bridge	Misku bridge	Marwuha bridge	Total %
A. Establishment of bridge management user committee					
1. Yes	100%	59.5%	-	83%	60%
2. No	-	0.5%	28%	5%	9%
3. Don't know	-	40%	72%	12%	31%
B. Perception on the functioning of the maintenance committee					
1. Yes	100%	50%	-	2.5%	38%
2. No	-	2%	-	78.5%	20%
3. Don't know	-	48%	100%	19%	42%
C. Perception regarding the functioning of the maintenance committee					
1. Coordinating the overall task related to preventive and corrective maintenance measures	86%	-	100%	83%	67%
2. Safeguard trail bridge	14%	55%	-	7.5%	19%
3. Repair and maintenance of trail bridge	-	45%	-	9.5%	14%

5. Conclusion

The findings of this study shows that villagers in the sample sites have benefited greatly from the safer, convenient and quicker access provided by the trail bridges. Lives and property are no longer at risk while crossing rivers. Furthermore, the year-round access provided by the bridges have led to safer access to schools for students, especially girls, leading to improved attendance and education. Similarly, more women are giving births at health facilities. Agricultural extension workers also state that it is now much easier for them to provide timely services to Kebeles across rivers. Significantly, household incomes have also increased with additional sources of income opportunities opened by the access provided by the trail bridges.

Overall, the majority of respondents recognize the bridges as a vital community resource, with many expressing a willingness to contribute towards their maintenance. However, this has not materialized, as BMCs are effective and functional at only one of the sampled sites. This raises the question of why this disparity exists, and further study is needed to apply these learnings to other sites.

Annex 1: Household survey questionnaire

HELVETAS Ethiopia TRAIL Project

Post construction Assessment

Household Survey Questionnaire

Dear Participants,

It is known that Helvetas Ethiopia in collaboration with Amhara Road Bureau is implementing a project that aims at constructing Trail bridges that help connect the community to the different kebeles and district and thereby promote access to the different services. In line with this, the TRAIL Amhara Project is intended to assess the contribution of the trail bridges in education, health, and market access within their catchment areas where the Trail bridges were constructed. I would like to ask you a few questions on the contribution of the trail bridges to access to basic services. You are asked to participate in this assessment because your personal views and experience as bridge user community member is important to the project.

Thank you for your cooperation for realizing the aims of the assessment and participating in completing this questionnaire.

Are you willing to provide information on the matter? A) Yes B) No

Name of the Enumerator: _____

SECTION A: General Information

No.	Question	Response
A1	Zone	
A2	Woreda/District	
A3	Trail Bridge Site	
A4	GPS Coordinates for bridge sites	Latitude _____ Longitude_____

SECTION B: Demographic Characteristics

No.	Question	Response
B1	Name	_____
B2	Age	_____
B3	Sex	1. Male 2. Female
B4	Head of the household	1. Male 2. Female
B5	GPS Coordinates for bridge sites	Latitude _____ Longitude _____

SECTION C: Household Income

No.	Question	Response
C1	Before the construction of the trail bridge, did you have multiple (more than one) income sources?	a) Yes b) No
C2	If "yes", what was the main source of the household income?	a) Crop production b) Livestock c) Wage/Labour d) Petty Trade e) Other _____
C3	After the construction of the trail bridge, do you have multiple (more than one) income sources?	a) Yes b) No
C4	If "yes", what is the main source of	a) Crop production

	household income?	b) Livestock c) Wage/Labour d) Petty Trade e) Other _____
C5	Before the construction of the trail bridge, what was the average yearly household income?	_____ Birr.
C6	After the construction of the bridge, is there any change in your household income opportunities?	a) Yes b) No
C7	If "yes", after the construction of the trail bridge, what was the average yearly household income?	_____ Birr.
C8	If "yes", could you explain what new or improved income earning opportunities do you have in your family?	_____ _____

SECTION D: Information on Access to Basic Services

No.	Question
D1	Before the construction of trail bridge, when and under what conditions can you (your family member) go to access the following basic services? (Please put a (√) mark).

S/N	Basic services	Accessible throughout the year	Only dry season	With only limited access during rainy season	Long travel during rainy season	Long travel throughout the year
1	Health					

			post/center					
		2	Primary School					
		3	Secondary School					
		4	Market					
		5	Agricultural Input Services					

D2 After the construction of trail bridge, when and under what conditions can you (your family member) go to access the following basic services?

S/N	Basic services	Accessible throughout the year	Only dry season	With only limited access during rainy season	Long travel during rainy season	Long travel throughout the year
1	Health post/center					
2	Primary School					
3	Secondary School					
4	Market					
5	Agricultural Input Services					

D3 What is your means of transportation to access the above services?

a) On foot only
b) On foot & motorbike
c) On foot & public transport
d) Motorbike
e) On foot, Motorbike & Public transport

D4 How long the time taken to access to the following basic services?

S/N	Basic services	Before the construction of trail bridge		After the construction of bridge	
		Dry season (in hrs/min.)	Rainy season (in hrs/min.)	Dry season (in hrs/min.)	Rainy season hrs/mir
1	Health center				

	2	Primary School					
	3	Secondary School					
	4	Market					
	5	Agricultural inputs					

D5	Before the construction of the trail bridge, where did women in your household give birth?	a) At home b) At health Post c) At health Center d) At Hospital
D6	After the construction of the trail bridge, where do women in your household give birth?	a) At home b) At health Post c) At health Center d) At Hospital
D7	What has been the most important benefit from the trail bridge? (Tick only one)	a) Safety b) Time saved c) Convenience (easier to access services and/or transport goods) d) Others

SECTION E: Information on Lives and Properties Saved

No.	Question	Response
E1	Before the construction of trail bridge, have you ever lost any family member/ relatives while crossing the river due to in lack of bridge?	a) Yes b) No
E2	If “yes”, what were the family members/ relatives?	_____
E3	After the construction of the trail bridge, have you ever lost any family member/ relatives while crossing the river?	a) Yes b) No
E4	Before the construction of trail bridge, have you ever lost any	c) Yes d) No

No.	Question	Response
	properties while crossing the river due to lack of bridge?	
E5	If yes, what properties you had lost while crossing the river?	a) Farm Products b) Livestock c) Other _____
E6	If you lost farm products, how many quintals you had lost?	_____
E7	How much it would have been in cash?	_____
E8	If you lost livestock, how many livestock you had lost?	_____
E9	How much it would have been in cash?	_____
E10	After the construction of trail bridge, have you ever lost any properties while crossing the river	a) Yes b) No

SECTION F: Community Ownership

No	Question	Response
F1	How do you rate the level of community awareness on the benefit of trail bridge?	1.Very Poor 2.Poor 3.Fair 4.Good 5.Very Good

F2	How do you rate the level ownership the community has in the bridge catchment area?	1.Very poor 2.Poor 3.Fair 4.Good 5.Very Good
F3	How do you rate the level commitment of the community to pay for trail bridge maintenance?	1.Very poor 2.Poor 3.Fair 4.Good 5.Very Good
F4	What is the community's level of commitment to preventing vandalism or theft of parts of the trail bridge?	1. Very poor 2. Poor 3. Fair 4. Good 5. Very Good
F5	Has a trail bridge management & user committee been established?	a) Yes b) No c) I do not know
F6	If “yes”, is it currently functional?	a) Yes b) No c) I do not know
F7	What is the function of the trail bridge management & user committee?	a) Mobilize finance for bridge maintenance b) Repair and maintenance of trail bridge c) Safeguard trail bridge d) Coordinating the overall tasks related to preventive and corrective maintenance measures e) Other _____
F8	Do you pay regularly for trail bridge repair and maintenance services?	a) Yes b) No
F9	If “No”, what is the reason?	a) The tariff is too high b) I am not requested c) There is no platform for payment d) I don’t use the bridge e) Other_____

F10	Who decides the trail bridge repair and maintenance fee?	a) Bridge user &management committee b) Woreda Road office c) Local community leaders d) Kebele admin office e) The User community
F11	Who collects the trail bridge repair and maintenance fee?	a) Bridge user &management committee b) Employed person c) Kebele admin office d) Woreda Road office e) Other _____

Thank You for your time!

Annex 2: Daily Traffic Count Survey

No.	Question	Response
1	Name	_____
2	Age	_____
3	Sex	1. Male 2. Female
4	Age group	1. < 15 2. 15 – 30 3. > 30
5	GPS Coordinates for bridge sites	Latitude _____ Longitude _____
6	Trail Bridge Site	a)
7	Data collection day	b) Market day c) Non-market day
8	For what purpose are you crossing the bridge now?	d) To access to health services e) To access to primary school f) To access to secondary school g) To access to local market h) To access to agricultural inputs i) Other
9	If “Other”, please specify it	_____
10	How frequently do you have to travel to access this service?	a) Daily b) Once in a week c) Twice in a week d) Once in a month e) Twice in a month f) Other
11	If “Other”, please specify it	_____

Annex-3: Semi-Structure Interview Guide

Education (For School Principals)

1. Is the construction of trail bridge the priority of the community in the Kebele? How?
2. Can you explain the situation for girls that cross the river to come to school?
3. Do you think that the situation has impact on the students' attendance? How?
4. Do you think that the bridges have had an impact on teachers? How?
5. Did the students face loss due to the river or lack of bridges?
6. Can you tell me the total numbers of students that cross rivers to come to the school before and after the construction of the trail bridge?
    a. One year Before construction: boys _____ Girls ____ Total _____
    b. After construction: boys _____ Girls _____ Total _____

Health (For health Extension workers)

1. Is the construction of trail bridges the priority of the community in the Kebele? How?
2. Can you explain the situation how the community accesses health services crossing the river before the construction of the trail bridge?
3. Can you explain how health workers services in providing healthcare to communities have been impacted by the trail bridge?
4. Did the community face loss due to the river or lack of bridges? If yes, what were the losses (human and animal live loss, farm products, others?)
5. Do you have information on the number of clients who accessed the health services crossing a river before and after the construction trail bridge?
    a. One year Before construction: Male _____ Female _____ Total _____
    b. After construction: Male _____ Female _____ Total _____
    c. Number of pregnant women who received prenatal care crossing the river one year before the construction of trail bridge _____.
    d. Number of pregnant women who received prenatal care crossing the river after the construction of trail bridge _____.

Agriculture (For Agricultural Extension workers)

1. Is the construction of trail bridge the priority of the community in the Kebele? How?
2. Did the community face loss due to the river or lack of bridges? If yes, what were the losses (human and animal live loss, farm products, others?)
3. How do you provide extension service to the farmers during rainy season?
4. How do you provide agricultural inputs to the farmers during the wet season?
5. Has there been a change in the price of agricultural goods after the construction of the trail bridge? If so, by how much?
6. Can you explain how lack of roads and bridges affect the agricultural extension services in your kebele?
7. How does the community access to market for their farm products in Kebele? (Especially during the rainy seasons?)