

# Transforming Community Health through the Provision of Water, Sanitation, and Hygiene

Final Project Report



Prepared for

Fondation Jan & Oscar

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The Karen Hilltribes Trust (KHT)

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## Project Details

**Project name:** Transforming Community Health through the Provision of Water, Sanitation and Hygiene

**Aim:** The overall aim of the project is to transform community health for 177 Karen people in Ban Yod Pai through the construction of a gravity-fed water system and 24 sanitation units, and the strengthening of local capacity and WASH education, leading to improvements in health and wellbeing and contributing to increased access to education, livelihoods and gender equality

**Location:** Ban Yod Pai, Mae Chaem District, Chiang Mai Province, Thailand

**Total beneficiaries:** 177 Karen People

**Period of project:** 1<sup>st</sup> June – 30<sup>th</sup> November 2021 (6 months)

**Reporting period:** 1<sup>st</sup> June – 31<sup>st</sup> October 2021 (5 months)

**Project budget:** 736,779 THB / 23,390 CHF

**Date grant accepted:** 19<sup>th</sup> May 2021                      **Grant amount:** 23,000 CHF

**Amount received:** 791,097 THB                      **Date received:** 11<sup>th</sup> June 2021

**Budgeted XRT:** 1 CHF = 31.50 THB                      **Actual XRT:** 1 CHF = 34.40 THB

**Funds expended:** 724,714 THB                      **Funds remaining:** 66,383 THB

**Amendments:** Due to the effects of the COVID-19 pandemic, the Karen Hilltribes Trust (KHT) was unfortunately unable to complete hygiene education sessions as planned. Instead, a single hygiene education session was held with a smaller group of individuals, with specific attention paid to improving the hygiene behaviour of the water committee. The project also concluded one month earlier than planned, as all activities had been successfully completed. All other activities were completed on time, within budget and as detailed in the project application.

### Summary of achieved outputs during the reporting period:

Village	Water System Beneficiaries		Sanitation Units Constructed		Hygiene Education Sessions		Water Committee Members	
	Target	Achieved	Target	Achieved	Target	Achieved	Target	Achieved
Ban Yod Pai	177	177	24	24	2	1*	10	12

\*Activities were affected by COVID-19

*On behalf of the KHT team and the community members of Ban Yod Pai, we would like to express our sincere gratitude to Fondation Jan & Oscar for your ongoing commitment to improving the lives and the social determinants of health of the Karen people!*

## 1. Introduction

The Karen are the largest ethnic minority group in Thailand with most communities residing in low-resource, rural, and mountainous areas in Northern Thailand. As a result, communities often have limited access to adequate water, sanitation, and hygiene (WASH) facilities, with a significant proportion still reliant on contaminated water sources. A study published in 2020 found that 100% of natural water sources, including rivers and wells, utilised by Karen communities were contaminated with faeces and harmful bacteria.<sup>1</sup> This poses a significant risk factor for contracting numerous communicable diseases including typhoid, cholera, intestinal parasites, and diarrhoea.

Consumption of unsafe water, improper sanitation and poor hygiene practices exposes individuals to preventable health risks by increasing the likelihood of disease transmission. The debilitating effects of illness not only impact well-being, but also contribute to low school enrolment, attendance, and retention rates and reduces economic productivity. Children, in particular, are disproportionately affected by bacterial and parasitic water-borne diseases with as much as 48% of Karen children suspected to be infected with intestinal parasites in Northern Thailand.<sup>2</sup>

In addition to poor WASH services, a large proportion of the population in Northern Thailand live below the global poverty line. Primary data conducted by KHT has revealed that annual household earnings average at approximately 24,500 THB (644 GBP). This poverty-disease cycle presents a major barrier to building community resilience and sustainable development for Karen villages.

KHT works closely with Karen communities across Northern Thailand to improve long-term health, education, and livelihood outcomes. One way it does this is by addresses the social determinants of health through constructing WASH infrastructure to enable access to clean water and improved sanitation facilities and improve WASH behaviour. In light of the COVID-19 pandemic, expanding community health initiatives to a wider number of Karen communities has become increasingly important.

Thanks to the generous support of Fondation Jan & Oscar, KHT was able to initiate a Transforming Community Health Project in June 2021 in Ban Yod Pai. The project aimed to enhance health and well-being in the community through improving WASH services between 01 June to 30 November 2021. The following sections of this report will detail all completed project activities from the project.



*Ban Yod Pai community with the KHT Water System*

<sup>1</sup> Sudsandee et al. (2020) Drinking Water Investigation of Hill Tribes: A case study in Northern Thailand. *International Journal of Environmental Research and Public Health*, 17(5), 1698.

<sup>2</sup> Yanolaa et al. (2018) Current prevalence of intestinal parasitic infections and their impact on haematological and nutritional status among Karen hill tribe children in Omkoi District, Chiang Mai Province. Thailand, *Acta Tropica*, 180, pp.1-6.

## 2. Project Activities

### 2.1. Project design and site survey

An initial needs assessment was conducted in Ban Yod Pai before the project application was submitted to Fondation Jan & Oscar. This informed KHT of the need within the community and their current WASH situation. As detailed in the application, prior to the project, the community were reliant on a very basic water system that was no longer fit for purpose. The community has also been able to secure a small amount of funding from the Government to install a pipeline from a water source 8Km away. However, this funding had only enabled the community to install a total of 3Km of pipeline, rendering both the existing water system and newly installed pipeline not fit for purpose. This is where KHT decided to step in to help.

Once funding was agreed in May 2021, KHT's construction team returned to the village to carry out a final site survey to prepare for the project activities. During the site survey, KHT's team built rapport with key community members and updated and verified basic demographic information previously collected. This also provided an opportunity for the team to further familiarise themselves with the geography of the area and assess the existing pipeline that was previously installed. A construction plan was then established using the gathered information.



*Programme Director meeting village representatives (left); WASH Manager recording construction details (right)*

KHT encourages community participation and ownership in all projects, therefore, as part of this site visit, community volunteers were also identified to support construction activities. In total, approximately 40 community members agreed to volunteer and assist the KHT team in construction work over the 4-week construction period. This participatory approach also aids the transmission of know-how and expertise from KHT's local construction team to the Karen people, enabling them to better maintain and develop the water and sanitation systems in the future and supporting overall project sustainability.

Because of the ongoing insecurity posed by COVID-19, KHT's team kept interactions with key community members to the minimum and abided by social distancing measures. KHT's Director of Programmes (Salahae) also sought for reassurance that the community was comfortable with the continuation of the water project given the current situation.

#### **Key outputs**

- ✓ Completion of detailed site-survey in target community
- ✓ Context-specific design of gravity-fed water system and sanitation units
- ✓ Creation of logistics and construction plan with community input
- ✓ Recruitment of community volunteers



## 2.2. Water system and sanitation unit construction

The construction of the gravity-fed water system and sanitation facilities began at the start of June 2021 and took four weeks to complete.

As the government funded pipeline only consisted of 3Km of pipes, KHT's team started the construction of the water system by building a water source collection point to ensure a sufficient flow of water into the system. There was also no filtration system in place when KHT arrived. Therefore, after the water source collection point was built, the team then constructed two filtration tanks to help filter and purify the water from the natural source. These filtration systems comprise of layers of charcoal, sand and gravel and remove impurities from the water before it enters the system.



*Water source collection point (left); KHT team joining the new and existing pipelines (right)*

With the assistance of the community volunteers, the pipeline was then constructed to transport the water from the natural source 8Km away to the site of the two new storage tanks. As the initial 3Km had already been constructed, the team first connected the existing pipeline to the newly created filtration tanks and then constructed the remaining 5Km of pipeline with support from the community volunteers.

Once the pipeline had arrived at the village, attention was turned to the construction of the two storage tanks. As KHT's water system is gravity-fed, the tanks must reside at a higher altitude than the village to ensure sufficient pressure to deliver the water across the community. The two new storage tanks were therefore constructed at a site located just above the village. Each storage tank carries up to 10,000 litres of water and once completed, were connected to another pipeline system to transport the water directly to the village.



*Construction of the two storage tanks by KHT team and community volunteers in Ban Yod Pai*

The extended piping system and 12 standpipes, which are positioned across the village, ensures all community members are able to access drinking water in close proximity to their homes. Based on previous projects, KHT has found that community members tend to further expand the piping system independently in the following months to enable access to water directly in their homes. This is an important aspect of the project as it allows communities to take ownership of the water system as well as to make decisions according to their specific needs, even after KHT's role in the project is fulfilled.

The WHO defines optimal access to water as being able to collect more than 100 litres of water per capita per day on average<sup>3</sup>. As KHT's water system comprises of two 10,000 litre storage tanks, each household in Ban Yod Pai has access to over 570 litres of water per day, whilst there is also 113 litres of water available per capita per day, satisfying this guidance. Having access to water via a tap or multiple taps within the house is also an important step to achieving optimal access to water as suggested by the WHO.<sup>4</sup> Community members extending the system into their homes therefore increases the impact of the project and further highlights the role of the community in sustainable development.

Community participation in the construction phase is therefore crucial to learn the practical skills required for the maintenance and further development of the water system. Having access to clean water closer to homes can encourage better and more frequent hygiene practices, consequently decreasing the chances of contracting various illnesses ranging from diarrhoea to COVID-19. This, in turn, can increase school attendance among Karen children and reduce absence from income-generating activities, such as farming, as a result of illness.



*Community volunteers supporting construction of the piping system in Ban Huay Moo*

In addition to helping to construct the water systems, community volunteers worked alongside KHT's sanitation specialist to construct 24 sanitation facilities in the village. Each sanitation facility consists of a pour-flush pit latrine with a ventilation pipe, a tap with soap for handwashing and/or showering and a separate tap and a bucket to store flush water. To ensure the privacy and security of latrine users, a lock is installed on the door. The pour-flush system helps to prevent flies, mosquitoes and odour due to the water seal in the defecation hole,

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<sup>3</sup> Ibid.

<sup>4</sup> World Health Organization (2017). Guidelines for drinking-water quality: fourth edition incorporating the first addendum. Geneva: World Health Organization. Licence: CC BY-NC-SA 3.0 IGO.

which was an ongoing problem with open defecation.<sup>5</sup> These latrines follow guidance from WHO and are categorised as improved sanitation facilities under this guidance.

To further incentivise positive hygiene practices, each unit was also equipped with soap. Handwashing practices remain arbitrary among the Karen with access to soap being limited. Having a tap in the same room with the presence of soap can act as a reminder and can help internalise basic hygiene practices. Moreover, to KHT's positive surprise, the construction team has observed that latrine units also served the purpose of a washroom with community members utilising the space and the new water access to wash and dry their clothing, rather than walking a few hundred metres in order to do so.



*Latrine/shower units in Ban Yod Pai*

In fact, doing laundry on-plot is an essential step towards optimal access to water, according to the WHO.<sup>6</sup> Furthermore, if communities experience scarcity of water, for example during the dry season, water already used for laundry and bathing may be used as flush water. However, with the exception of being used for flushing, waste water from bathing or washing should not be disposed into the pit<sup>7</sup>, which is clearly communicated to community members by KHT's team.

The positive effects of the new water and sanitation systems are thus complementary, allowing KHT to multiply the final impact on communities. In total, 177 community members in Ban Yod Pai have benefitted from the new water system and sanitation facilities, ensuring access to clean water and sanitation services in close proximity to and/or in their homes.

#### **Key outputs**

- ✓ Construction of a gravity-fed water system enabling a total of 177 Karen people with access to clean water in proximity to or directly in their homes
- ✓ Provision of clean water up to 113 litres per capita per day
- ✓ Construction of 24 sanitation units providing every household in targeted villages with improved and individual sanitation facilities

<sup>5</sup> Brikke and Bredero (2003). Linking technology choice with operation and maintenance in the context of community water supply and sanitation: a reference document for planners and project staff. Geneva: World Health Organization and IRC Water and Sanitation Centre.

<sup>6</sup> World Health Organization (2017). Guidelines for drinking-water quality: fourth edition incorporating the first addendum. Geneva: World Health Organization. Licence: CC BY-NC-SA 3.0 IGO.

<sup>7</sup> Ibid.



## 2.3. Capacity building and creation of water committees

Throughout the construction period, KHT has fostered participation and worked closely with community members to encourage a bottom-up approach to project management. KHT aims to ensure that communities can increase the sustainability and the lifespan of WASH facilities by equipping them with the skills and knowledge needed for its maintenance and repair.



*KHT Construction Manager, Aka (left), working with community volunteers on the pipeline in Ban Yod Pai*

The creation of a community-led water committee with the help of KHT's team is also integral for realising this. The water committee are responsible for the maintenance of the water system and for the management of a community fund to finance repair and maintenance work. A total of 12 committee members, three women and nine men, were elected by the community in Ban Yod Pai.

KHT always encourages equal gender representation in the water committees to promote the active involvement of Karen women and ensure that women-specific needs related to WASH are not neglected. However, the final selection always lies with the villagers themselves to prevent any imposition and encourage community ownership. KHT will continue to work with its team to try and increase female representation in the committee and promote the role of women in the village. Once selected, KHT's team briefed the committee on its purpose and its workings in order to transfer the responsibility of WASH maintenance to them.

It was also recommended by KHT that the water committee should establish a community fund to support any necessary water system maintenance or repairs. KHT has found that asking all households to contribute 100 THB per year is sufficient to cover basic maintenance and repair costs. For those unable to financially contribute, either participating in labour activities in the village and/or providing approximately 12kg of rice to support other community members who are actively maintaining the system were identified as suitable measures. The purpose of trying to get all households involved is to foster collective social responsibility over the maintenance of the water system and to promote the long-term sustainability of the project.

### **Key outputs**

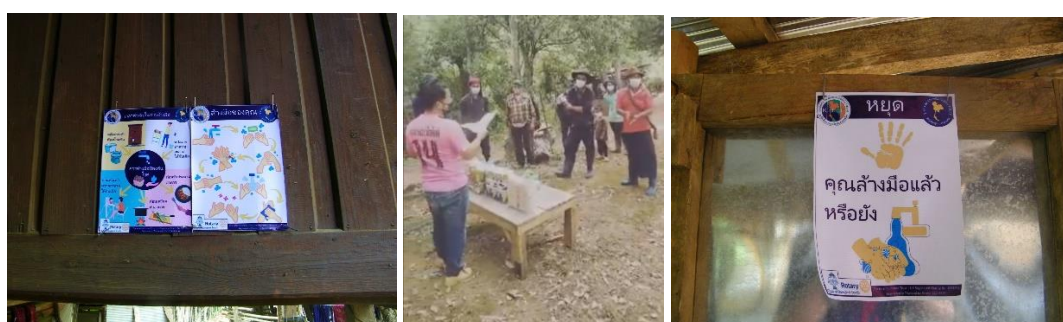
- ✓ Establishment of a water committee with 12 members
- ✓ Creation of a community fund in the village
- ✓ Basic skills & knowledge development for the maintenance of WASH facilities



## 2.4. Community-led hygiene sanitation education

Due to ongoing COVID-19 restrictions at the time advising against group activities, KHT was unable to conduct hygiene education sessions in Ban Yod Pai as planned. This decision was also taken as many community members, as well as KHT's team, were afraid of contracting the virus through group interactions.

However, KHT was still able to conduct a hygiene education session with the water committee and a few additional participants. The sessions involved short demonstrations and education surrounding the critical moments to wash hands, disease transmission vectors and handwashing best practice. As part of KHT's participatory education model, the water committee were then tasked to further promote good hygiene and sanitation practices in the community through word-of-mouth and by acting as good hygiene behaviour champions.



*Hygiene posters and education session being led by KHT's team in Ban Yod Pai*

To support the sessions, large hygiene education posters with illustrations and writing in Thai language were placed in public spaces in the village. A total of 35 smaller versions of the posters were also given to each household to be placed in their sanitation units. KHT hopes that this will act as a reminder of good hygiene practices for adult/elderly Karen and that these posters will help Karen children build up good hygiene practices early on and encourage handwashing.



*Images of KHT's current hygiene education materials*

### **Key outputs**

- ✓ One hygiene education sessions conducted with the water committee and additional community members
- ✓ Provision of 75 hygiene education posters distributed across the village

## 3. Impact, Monitoring & Evaluation

### 3.1. Key outcomes

KHT places great emphasis on understanding the impact and implications of its projects and measuring overall performance against pre-determined outcomes. To do this, we collect data and information from various sources and stages of project implementation, including:

1. Needs assessment taken prior to funding, which is reverified before the project begins;
2. Baseline surveys conducted with 20% of households in the village during construction;
3. Endline surveys conducted with the same individuals 3 months after construction;
4. Ad hoc inspections and revisits to project sites by Thai and UK staff over time.

KHT is happy to confirm that three of the four pre-determined expected outcomes included in the project application were successfully achieved on time and within budget. Further details on the outcomes are below and in section 4. Financial Review for project expenditure.

- ✓ *Outcome.1. By 31<sup>st</sup> July 2021, 100% of households in Ban Yod Pai have access to a plentiful supply of safely managed water for drinking. (Target 100%; Achieved 100%)*

The gravity-fed water system was completed by 30<sup>th</sup> June 2021, providing all households in the village with a supply of water. Optimal access to water is defined by the World Health Organisation (WHO) as more than 100 litres of water per person per day. As the storage capacity of the water system installed by KHT is 20,000 litres and the storage tanks fill a minimum of once per day, the project has ensured that all 177 people in the village have access to a minimum of 113 litres of water each day.

KHT also conducted basic water tests on the final supply of water from the system to ensure it is safe to drink and can confirm that the water tests conducted returned negative results for the presence of hydrogen sulphide, which indicates that the water is free from faecal bacteria.

- ✓ *Outcome.2. By 31<sup>st</sup> July 2021, 100% of households in the village have access to improved sanitation facilities. (Target 100%; Achieved 100%)*

Although there is total of 35 households in the village, it was reported in KHT's initial needs assessment that 11 of the households in the village already had improved sanitation facilities.

The construction of 24 household sanitation facilities was completed on 30<sup>th</sup> June 2021 and by constructing an additional 24 sanitation facilities at households that were reported as having either very poor or no latrine, KHT has ensured that 100% of households in the village now have access to improved sanitation facilities.

- ✓ *Outcome.3. By 30<sup>th</sup> November 2021, 75% of villagers report an increase in their understanding of hygiene behaviour. (Target 75%; Achieved 83%)*

As mentioned, KHT conducts baseline and endline surveys with 20% of households in the community. As part of these surveys, KHT asks household representatives a number of key questions about hygiene practices in the community.

At baseline, 100% of respondents could name three of the five critical handwashing moments,

whilst 57% of respondents did not know all three of the main points in washing hands. When KHT returned and asked the questions to the same participants again at endline, 83% of respondents were now able to name four or more of the five critical handwashing moments, whilst 100% of respondents named all three of the main points in washing hands.

- *Outcome.4. By 30<sup>th</sup> November 2021, 57% of households report a decrease in occurrence of diarrhoea by the end of the project (Target 57%; Achieved 43%)*

Before the project, 43% of households experienced at least one occurrence of diarrhoea in the previous month. When KHT returned to the village, all households surveyed reported no cases of diarrhoea in the previous month. It is a great achievement that no cases of diarrhoea were reported in the village, however, KHT unfortunately did not meet the pre-determined outcome target. This was due to a lower-than-expected rate of diarrhoea before the project was implemented.

Cases of diarrhoea can fluctuate in different seasons, with the rainy season typically increasing the risk of diarrhoea. The fact that the baseline surveys were conducted just as the rainy season was beginning, and that no cases of diarrhoea were reported at endline, right in the peak of the rainy season, is a positive sign and KHT hopes that this trend continues all year round.



### 3.2 Expected Impact

As detailed in the overall aim of the project, improving WASH infrastructure and services in the community is expected to lead to improvements in health and well-being, but also contribute to increased access to education, livelihoods and gender equality over time.

Although KHT was able to collect endline data three months after project completion, this is too early to confidently share the long-term impact of the project. Initial impact data is positive though and provides an understanding of what we would expect to witness over time:

- 43% of households reported at least one case of typhoid in the previous year. Although it is too early to tell how many cases of typhoid there will be in year after the project, so far there has not been any cases reported.
- 100% of households reported at least one case of parasitic worms in the previous year.

Again, although it is too early to tell, initial signs suggest an improvement in community health here as well, as there were no cases reported since project completion.

- With better community health and well-being, children in the village are expected to be absent from school due to illness less, whilst adults are expected to miss fewer days generating an income.
- With improved sanitation facilities in place at all households in the village, women and girls have a safe space to use the toilet and where dignity can be maintained, whilst incorporating women into the water committee will further enhance their involvement and position in the village.

### 3.3 Case Studies

When KHT's team returned to Ban Yod Pai in September 2021 to collect endline data from the project, the team also collected a case study to support the qualitative assessment of local needs and the expected impact of the project.

#### Mr Takudi from Ban Yod Pai

Mr Takudi is a 55-year-old Karen man who lives in Ban Yod Pai with his family. In the past, life was hard for Mr Takudi and his family.

*"Our life is hard for not have enough drinking water, not enough latrines. We have to collect the water from far away and for the toilet, we have to use the forest."*

Mr Takudi also reported that before the project began, the village did not have enough water all year round, even in the rainy season, and that the little water that they did have was not clean.

During the project, Mr Takudi and the rest of the community volunteered their time to help install the water system and latrines. He helped the KHT team to carry the sand and gravel, mix cement, lay pipes and build the storage tanks. When we spoke to Mr Takudi in September 2021, almost three months since the project was completed, he reported that his family's lives had already started to improve thanks to the project.

*"Our life is getting better. We don't have to collect the water from far away like before, which means we don't have the waste time like in the past. When we have clean water and latrines, the villagers are healthier and have better hygiene in the village. This means we have more time to work and have less disease"*

*The project is very good for our village, we always have water now and the water system does not stop like in the past."*





## 4. Financial Report

The budget for the project was 736,779 THB (23,390 CHF). KHT expended a total of 724,714 THB (23,007 CHF), resulting in an underspend of 12,065 THB (383 CHF). This is a budget variance of just 1.6%.

Although the overall underspend compared to the project budget was just 12,065 THB, KHT actually has a total of 66,383 THB remaining from the grant received. This is because the exchange rate at the time of the donation had changed compared to the project application. The original budget was agreed in November 2020, before being updated in May 2021. At the time an exchange rate of 1 CHF = 31.50 THB was used because of the highly volatile foreign exchange market. In reality, the exchange rate used on the day of the grant transfer was actually 1 CHF = 34.40 THB. This resulted in KHT receiving 54,318 THB extra than was required.

KHT recently sought approval from Fondation Jan & Oscar to reallocate remaining funds to its December 2021 Water, Sanitation & Hygiene project. This was very generously approved and KHT will ensure to provide an update on how these surplus funds were utilised in 2022. Further details of funds expended and funds remaining are highlighted in the table below.

Description	Project Budget		Funds Expended		Funds Remaining	
	THB	CHF	THB	CHF	THB	CHF
Pipeline	205,854	6,535	163,939	5,204	41,915	1,331
Latrine Units (24)	198,000	6,286	228,816	7,264	(30,816)	(978)
Cement	16,200	514	16,020	509	180	6
Steel	16,200	514	14,450	459	1,750	56
Taps with Screws	1,063	34	1,080	34	(17)	(1)
Tools and Glue	7,983	253	12,640	401	(4,657)	(148)
Filter and Moulds	6,900	219	0	0	6,900	219
Delivery of Materials	35,000	1,111	32,000	1,016	3,000	95
Food on Site	4,800	152	5,000	159	(200)	(6)
Community Education Events	6,400	203	6,790	216	(390)	(12)
Project Design and Survey	6,000	190	1,600	51	4,400	140
<b>Water Project Staff</b>	<b>91,875</b>	<b>2,917</b>	<b>101,875</b>	<b>3,234</b>	<b>(10,000)</b>	<b>(317)</b>
Vehicles Fuel, Repair and Maintenance	35,808	1,137	35,808	1,137	0	0
Monitoring and Evaluation	30,450	967	30,450	967	0	0
Contribution to Director	47,563	1,510	47,563	1,510	0	0
Contribution to KHT Running Costs	26,684	847	26,684	847	0	0
<b>GRAND TOTAL</b>	<b>736,779</b>	<b>23,390</b>	<b>724,714</b>	<b>23,007</b>	<b>12,065</b>	<b>383</b>

Exchange Rate

1 CHF:31.50 THB

1 GBP:THB 38.05

## 5. Future Action

Now that the project has concluded, KHT does not have any further activities to complete in the village. KHT will however maintain contact with the community to ensure the system and sanitation facilities are functioning as planned. A revisit will then be conducted within the next 18 months to collect further data regarding the long-term impact of the project.

## 6. Conclusion

Thanks to Fondation Jan & Oscar's support of the project, KHT has been able to provide 177 Karen people in Ban Yod Pai with access to clean water and improved sanitation facilities. Over time, the project is expected to address the social determinants of health and equip the community with the necessary skills to maintain WASH facilities, ensuring long-lasting benefits for improved health and livelihoods as well as better access to education.

Anticipated primary and secondary benefits can ultimately increase the resilience of Karen communities and enable them to create a secure future for themselves in the face of external hardships posed by climate change and COVID-19, in particular. The progress made in the completion of this project has also directly contributed towards fulfilling the following Sustainable Development Goals:



*We are grateful to Fondation Jan & Oscar for making this project a reality and we hope to continue working together to empower the Karen people in Northern Thailand.*



THANK YOU!