



TRIP REPORT: JANUARY 2019





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Introduction

In February 2018 the preparations had begun for the first Lotus Project field trip to North East Vietnam. Throughout the year, the initial steps in the form of a feasibility study, province identification and selection, initial outreach, target village selection and a preliminary scope of work were completed beforehand to increase the productivity during the fieldwork.

In January 2019 the Lotus Team (“team”) traveled to Lang Son Province, Vietnam, to undertake site visits for its renewable energy projects.

Before visiting Lang Son, the team identified two target villages to be carried forward to the next stage of the project development process. The purpose of this trip was to survey the shortlisted villages, meet the community leaders and interview the villagers to assess the appropriateness of sites for future project development and execution.

First, this report describes the journey to the villages followed by a summary of their geographical location, properties and a survey of the inhabitants of the villages. Secondly, the findings are presented and summarized. Finally, the report summarizes the relevant information and provides an outlook for the next phase of project development in the form of a conclusion.

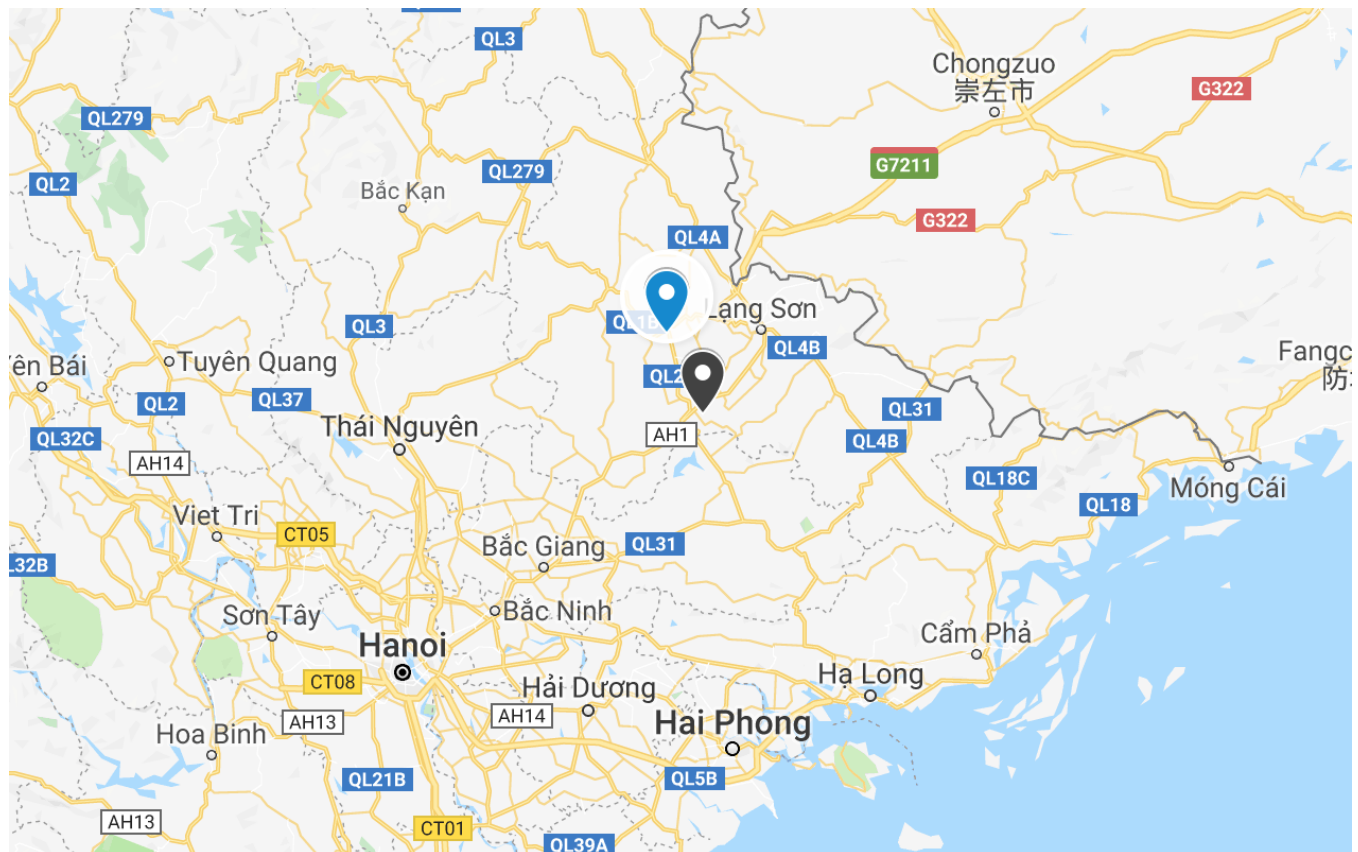
1. The journey to Lang Son Province

Lang Son province lies in northeast of Vietnam, bordering China to the southeast, Quang Ninh and Bac Giang to the south, Thai Nguyen province to the southwest and Bac Kan to the west. It is not only an important strategic border province, but it also has been long considered sacred land by the Vietnamese people. It is the land of the historical relics and cultural landscapes such as Tam Thanh cave, Ai Chi Lang, Fortress of the Mac dynasty and Tan Thanh pagoda. Being a living space of many ethnic groups such as Tay, Nung, Kinh, Dao, Hoa, Mong, San Chay has made it one of the major focus in Vietnam’s ethnic minority policy. However, ethnic communities living in mountainous areas like Lang Son face a lot of socio-economic hurdles, such as low literacy levels, harsh living conditions, lack of electricity and clean water.



Nevertheless, Lang Son has a great potential for developing renewable energy – an alternative pathway for Vietnam’s cost-effective energy future. Independent off-grid renewable energy projects would be a sound solution for the region. It not only brings light to local people but also helps alleviate poverty and increase economic productivity in the most remote and sparsely populated regions of Lang Son province.

Geographical Location of Chi Lang and Van Quan



Chi Lang (black marker) and Van Quan (blue marker)



1.1. Chi Lang District

The mountainous district of Chi Lang lies in the southwest of Lang Son province. The district has a population of 77,910 and covers an area of 703 km². The district capital is Đồng Mỏ and is inhabited by two major ethnic communities, Tay and Nung, accounting for 49% and 34% of the total population, respectively. Chi Lang's economy depends mainly on agriculture with 77% of its land being used for subsistence farming. Typical agricultural plants in the region are anise and custard apple. Geographically, Chi Lang consists of a valley surrounded by high mountain ranges through which Thuong river flows. Despite its terrain being favorable to farming, the process of modernizing agricultural sector to promote economic productivity is still slow and its location makes it hard to receive electricity from the national grid. There are still several villages in Chi Lang district that don't have access to electricity, and this makes the inhabitants' lives very difficult.

Pa Mi is one of the villages that is still unelectrified and is considered an area with especially difficult socio-economic conditions largely because of its isolated location.

1.1.1. Degree of Electrification

Pa Mi village is 30 km from the district capital and reaching the village involves a 7 km hike through mountainous terrain. The village is not connected to the national electric grid and due to the terrain and absence of any motorable roads there are no plans to develop any grid infrastructure in the near future. As a result, the villagers have a very limited access to electricity and the only source of electricity is a small hydroelectric generator that uses the flowing water from the local spring. The generator only produces enough electricity to power 2-3 light bulbs per household and is out of commission during the rainy season when the spring floods arrive. Both the villagers and the local authorities were eager to help the team and provide logistic support for transporting equipment into the villages.

The village has around 10 small wooden shacks and each house has around 5 occupants. The houses don't have any air sealing and get very cold during the winter months due to air drafts. All the cooking is done indoors using firewood and this causes very bad air quality inside the houses.



The team spent around 6 hours at the village and was successfully able to:

- Interview most of the families living in the village.
- Scout potential sites for Solar PV installations.
- Get detailed location information for each house to map out the distribution system.

1.1.2. Villager Interviews

The most important objective of the trip was to interact with the local villagers and get an idea about the demographics of the village, perform an assessment of their lifestyle and living conditions, their current energy consumption patterns, level of connectivity with other villages in the commune and their aspirational energy use.

With the help of local volunteers, the team was able to interview most of the families in the village and get a very good understanding of the parameters identified above. The village comprises of 10 families and each family has around 5 family members. All the families engage in subsistence agriculture and they also raise livestock for personal use which they also occasionally sell. There are, on average, approximately 2 children per household and since there is no school in the village, they hike around 7 km to the nearest school. Cooking and indoor lighting are the most energy intensive activities in each household. Cooking is done using firewood which is gathered from nearby forests and each household spends about 2 hours per day on this activity. It is very difficult to get firewood during the rainy season which lasts around 5 months a year. Each house has around 2-3 light bulbs that are powered by the hydroelectric system. Only two families have mobile phones, but they don't have access to the internet.

Almost everyone who was interviewed mentioned that they would like to use electricity to light their houses, buy electric stoves and rice cookers to avoid dependence on firewood, buy equipment to help process food for livestock and improve their family's standard of living by purchasing TVs and refrigerators.



1.1.3. Local Authority Interviews

The team got an opportunity to meet with the Chairman and Vice Chairman of the People's Committee of Chi Lang district and give a brief presentation of the project's objectives and timeline. Furthermore, the level of energy access in the village, the immediate and long-term energy needs of the region and the different stakeholders involved in the process were addressed and discussed.

The authorities were very eager to facilitate the implementation of the project and informed the team that due to the difficult terrain EVN doesn't have any immediate plans to develop grid infrastructure in the area and the only viable alternative to provide electricity access to the villages is through off-grid Solar PV systems. The team also learnt about the difficult socio-economic conditions in the village and how providing electricity access could help alleviate some of these issues.

When asked what the greatest energy needs are in the community, Vice Chairman Truong indicated the main electricity needs could be addressed with solar energy. A high priority for the village is lighting. In terms of agriculture, solar energy can also help support post-harvest activities. Last, there is high population density around the public medical center of the province, but the electrical power there is low.

1.2. Van Quan District

Van Quan – a mountainous district, lies in the southwest of Lang Son province. Its economy mainly depends on forestry sector with 36,759 hectares for plantation forests. Unlike Chi Lang district, Van Quan has a more complicated terrain which consists of small valleys and caves created by various rugged mountains. This rough location makes daily life and agricultural activities very difficult for the locals. It has a dense river system with the two main rivers Ky Cung and Mopja going through the region that create a large underground water reserve. Yet, this natural advantage is still considered 'potential' for some remote villages in the district. Among them is Lung Thuoc village – an area with especially difficult socio-economic conditions. Without electricity, this village seems left behind the rapid process of economic development of the whole region.



1.2.1. Degree of Electrification

Lung Thuoc village is located 11 km from the district capital and reaching the village involves a 3 km hike through mountainous terrain. Just like Pa Mi, Lung Thuoc village is not connected to the national electric grid as well. The village is registered to participate in a solar program in the future, subject to availability of funding by the government, but currently the villagers don't have any access to electricity and most of the lighting needs are met by oil lamps.

The village has around 7 small wooden shacks located very close to each other and each house has around 3 occupants. The houses don't have any air sealing and get very cold during the winter months due to air drafts. All the cooking is done indoors using firewood and this causes very bad air quality inside the houses.

The team spent around 6 hours at the village and was able to successfully:

- Interview most of the families living in the village.
- Scout potential sites for Solar PV installations.
- Get detailed location information for each house to map out the distribution system.

1.2.2. Villagers Interviews

Villagers do not have access to any electricity and mostly depend of oil lamp and firewood for lighting and cooking. The village has around 7 families and they all engage in subsistence agriculture along with raising livestock for personal use and occasional sale. The nearest place with electricity access is a 6 km hike through the mountains which is where most of the villagers go to charge their mobile phones. During the interviews everyone indicated that the most immediate needs are lighting and finding an alternative to firewood-based cooking. The villagers also indicated that they would be interested in using the electricity to power farm equipment for preparing feed for livestock and keeping their livestock warm during the winter months.

1.2.3. Local Authority Interviews

The team met with the Vice Chairman of the People's Committee of Van Quan district and his team and give a brief presentation of the project's objectives and timeline. The team conducted a brief interview following the presentation to get an idea about the needs of the community, the



level of connectivity of Lung Thuoc village and the future plans of the government to develop energy infrastructure in the village.

2. Findings

Lotus Project evaluated the potential sites on the basis of the following six main components:

1. Accessibility
2. Community engagement
3. Poverty index
4. Local support by the authorities
5. Connectivity to the center of the District
6. Availability of natural resources to be transformed into electricity

Pa Mi and Lung Thuoc are located 70 km from each other. The national grid expansion program does not have any intention to build out the grid towards the direction of the villages due to their remote location and low population density. However, the district energy management department is keen to develop and support a clean and decentralized energy production solution for their remote villages and inhabitant in order to set the foundation for their economic development.

3. Evaluation of the results

Given the results of the field study, the team, found Pa mi and Lung Thuoc suitable to enter the next stage of the project development. This is, the six main evaluation components have led to the successful identification of two villages for the implementation plan of Lotus Project.

The trip has given the organization key information and tools to start the final phase of project development. This phase is characterized by bringing all the parts together and create a tailored solution plan for each of the villages to reach self-sustainability and independence with constantly increasing living standards.



Conclusion

In conclusion, the trip was a success. The purpose and objectives of the trip were met. Furthermore, the team was able to get a better sense of the culture and socio-economic development of the region and Vietnam in general. The outcome of the trip can be summarized as follows.

Vietnam is in the process of becoming a developed country. Nonetheless, for the country to become a developed and sustainable nation, it is necessary to provide the sufficient support to avoid making similar economic development mistakes that today's developed countries have made in the past. By providing targeted and tailored support to Chi Lang and Van Quan the team is confident that it will be able to develop a replicable framework which will indisputably be part of the pathway to progress.

Given the evaluation of both locations, the team has decided to move ahead with both in parallel. However, Lung Thuoc (Van Quan) will be prioritized due to the complete absence of electricity and the lower living standards.



4. Appendix

A) Trip Itinerary

Date	Time	Place	Activities	Working Content	Contact
14/1/2019	8:30 – 10:00	Room 707, 7 th Floor, Sunrise Building, 90 Trần Thái Tông Street, Cầu Giấy District, Hà Nội City	Meeting with GreenID	+ Exchange information related to Lotus Project + Share experience to work with a community, especially ethnic group and local authority + Share experience to choose contractors in Vietnam	+ Green ID: Ms Ha
	10:30 – 12:30	Pick-up place: GreenID office	On the way from Hanoi to Chi Lang District, Lang Son province	+ free	+ Vip bus Quynh Thanh
	12:45 – 14:30	Guest house of Chi Lang District: Đồng Mỏ town, Chi Lang District	+ Check-in Guesthouse + Having lunch with local authority		+ Chairman of the People's Committee of Chi Lang District: Mr. Hoc
	15:00 – 17:00	People's Committee Office (opposite the Guest House)	Meeting with Mr. Chairman and other leaders of the People's Committee of Chi Lang	+ Present an overview of Lotus Project + Exchange general information related to demographics; social and economic development in the district; + Survey the needs of electricity; the potential of Renewable Energy	+ Chairman of the People's Committee of Chi Lang District: Mr. Hoc
15/1/2019	7:00 – 17:00	Huu Kien commune	Go to villages to do survey and research	+ Interview local people...	Mr. Hoc
16/1/2019	7:00 – 11:00		+ Visit villages and finish working with Chi Lang District + Check-out Guest house		
	11:30 – 13:30		Have lunch and move to Van Quan District		
	14:00 – 16:00	Duc Tam I Street, Van Quan town, Van Quan District http://vanquan.langson.gov.vn/	Meeting with leaders of the People's Committee of Van Quan District	+ Present an overview of Lotus Project + Exchange general information related to demographics; social and economic development in the district;	Ms Lan Note: during the meeting, please ask them to provide transportation from the centre of District to communes/ villages (as suggested by Ms Lan)
17-18/1/2019	7:00 – 17:00	Villages in Van Quan District	Go to villages to do survey and research	+ Interview local people	
18/1/2019	14:00 – 16:00		Going back Hanoi		



B) Partners and Local Authorities

Green Innovation and Development Centre (GreenID)

Ms (Nguy Thi) Khanh: Executive Director

Mr (Tran Dinh) Sinh: Vice Director

(Nguyen Thi) Ha: Green Growth Program Manager

Lang Son Province:

Ms. (Chin) Huong: Official of Department of Foreign Affairs

Mr (Dinh HUU) Hoc: Chairman of the People's Committee of Chi Lang District

Ms. (Do Thu) Hanh: Official of Union of Technology and Science

Ms (Hua Phong) Lan: Head of Economic Development and Cooperation of Van Quan District