**Appendix 5.2**

# [Smart Energy-Sharing and Management Devices for a Low Carbon Society]
# [Traveling to Field Test Sites]
# Report Form

## I. Proposer:

| | |
|---|---|
| Name: | Dr. Natchpong Hatti |
| Position: | Senior researcher |
| Institution: | National Electronics and Computer Technology Center (NECTEC) |

## II. Objective:

1. To check the information, including specifications and the current physical conditions of the existing energy sources and electrical loads in the targeted testing areas.
2. To discuss with the community leaders and end users in the targeted areas to reconfirm their requirements, as well as the problems and limitations of the existing systems.
3. To observe the actual environment at each targeted site in order to identify any obstacles for the design and installation of the developed Energy Sharing Devices and/or Wireless Communication System, ensuring the most suitable solution for each location.

## III. Schedule:

| Date | Location | Work | Person in charge |
|---|---|---|---|
| 30 Sep 2025 | Mae Pang subdistrict, Prao district, Chiang Mai, Thailand | Tasks related to Objectives No.1, 2, and 3 | All participants listed |
| 1 Oct 2025 | (Cont.) Mae Pang subdistrict, Prao district, Chiang Mai, Thailand | Tasks related to Objectives No.1, 2, and 3 | All participants listed |
| | | | |

*(Note: describe the final schedule here)*

**IV. Participants:**

| No. | Name | Organization |
|---|---|---|
| 1 | Dr. Natchpong Hatti | NECTEC |
| 2 | Dr. Surasak Nuilers | NECTEC |
| 3 | Dr. Kanokvate Tungpimolrut | NECTEC |
| 4 | Dr. Yasunori Owada | NICT |
| 5 | Dr. Suparak Srita | Rajamangala University of Technology Lanna (RMUTL) |
| 6 | Mr. Sarawut Thawi | Local community, Mae Pang subdistrict |

*(Note: please add a participant list if there are a lot of people participating)*

**V. Summary of the activities corresponding to the objectives**

*(Note: Describe, in detail, the activities, e.g. how to install the equipment, maintain the equipment, train local researchers for data collection, etc.)*

1. **Objective:** To check the information, including specifications and the current physical conditions of the existing energy sources and electrical loads in the targeted testing areas.

   **Activities:**
   A site visit was conducted at Mae Pang Subdistrict to gather information on the existing energy sources and electrical loads. The survey covered solar home systems, a micro-hydro turbine (approximately 40 kW), and the electricity demand for coffee grinding machines in the community. In addition, the community has proposed the installation of 40 units of 1.2-kW solar home systems (one per household), which has been submitted for consideration by the Energy Conservation Promotion Fund, Ministry of Energy.

2. **Objective:** To discuss with the community leaders and end users in the targeted areas to reconfirm their requirements, as well as the problems and limitations of the existing systems.

   **Activities:** Meetings were held with community leaders and local residents to reconfirm their electricity needs and to discuss existing problems and system limitations. The main requirement identified was a reliable power supply for coffee grinding during the harvest season. Key challenges include insufficient power capacity, unstable electricity supply, and the absence of mobile network coverage for communication, particularly during emergency situations.

3. **Objective:** To observe the actual environment at each targeted site in order to identify any obstacles for the design and installation of the developed Energy

Sharing Devices and/or Wireless Communication System, ensuring the most suitable solution for each location.

**Activities:** A field survey was conducted to assess environmental conditions and potential obstacles for the installation of Energy Sharing Devices and/or a Wireless Communication System. It was observed that mobile signals are available at certain mountain summits near the village, which could be utilized to support communication system deployment.

**Conclusion:**

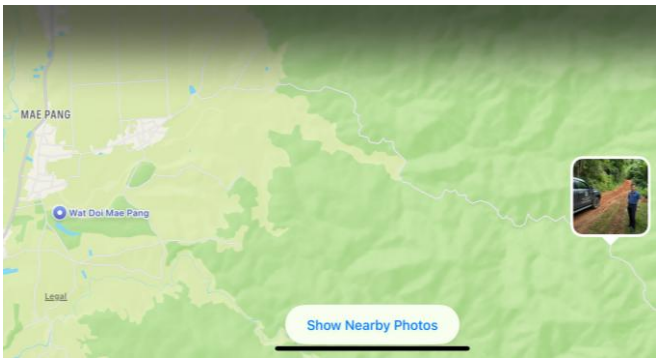
The community submitted a request to the Ministry of Energy for 40 sets of 1.2-kW solar home systems, one for each of 40 households. Whether the request is approved or not, these systems are designed for individual use and cannot support shared high-power appliances. In addition, we do not intend to make any modifications to these systems, as they are the property of the Ministry of Energy.

After further discussions among project members, participants, and local residents, it was proposed to develop a centralized photovoltaic (PV) system integrated with the existing micro-hydro turbine. This hybrid system would provide shared electricity for public lighting and coffee grinding.

Mr. Sarawut Thawi, a community representative, agreed to take the lead in collecting existing PV panels from the community to support this initiative. Furthermore, it was agreed to utilize a SIM card to connect to the mobile network at high-elevation points and then establish a local communication network using Wi-Fi or LoRa technology to extend connectivity to the village. This system would facilitate not only energy management under the project but also basic data communication, particularly for emergency notifications.

## VI. Others

*(Pictures)*




Some sections of the road leading to the villages, documented on 30 September 2025.

The generator room of micro hydro turbine of the subdistrict (30 September 2025)


A primary school, Ban Khun Pang School, and the community
(30 September 2025)

A drone photo taken from Ban Khun Pang School on 30 September 2025 shows another section of the village where the village leader's house is located.

A meeting in the village leader's house (30 September 2025)

A project members' meeting and discussion at the hotel in downtown Chiang Mai. (1 October 2025).

A meeting in a meeting room at the Mae Pang Subdistrict Office (1 October 2025).