

IPL-267 Annual Report

1. Project Title:

IPL-267 The Collaboration of debris flow early warning system between Vietnam and Taiwan

2. Main Project Fields

Select the suitable topics. If no suitable one, you may add new field.

(1) Technology Development

A. Monitoring and Early Warning, B. Hazard Mapping, Vulnerability and Risk Assessment

3. Name of Project leader

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Co- Project leader (Co-PI): Chih-Chung Chung, National Central University, Taiwan
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4. Objectives:

Study and develop a smart and real-time debris flow early warning system in mountainous areas of Vietnam. Pilot study in Sapa is to support the early warning of this natural disaster for authorities and local people.

5. Background Justification:

Debris flow is a dangerous disaster that regularly happens in the mountainous areas of Vietnam. According to Vietnam Disaster Management Authority (VNDMA) statistics in the past 20 years (2001 - 2019), there have been 590 debris flows occurred in Vietnam. In which most of them appeared in the Northern mountainous provinces in Vietnam such as Hoa Binh, Ha Giang, Lao Cai, Lai Chau, Son La, Tuyen Quang, Cao Bang, Bac Kan, etc. On average, there are about 30 debris flow happening in Vietnam every year. The damage caused by debris flows from 2001-2017 in only 15 northern mountainous provinces of Vietnam indicated that 748 people was deathl, 52,544 houses were damaged; 3,910 households had to relocate. Therefore, study for developing a smart and real-time debris flow early warning system is very important for reducing debris flow damages in mountainous areas in Vietnam.

6. Study Area:

The case study for developing a smart and real-time debris flow early warning system in focused mountainous areas of Sapa in Vietnam

7. Project Duration: 2 year (2022-2023)

8. Report

- (1) The purpose of this trip to Vietnam includes conducting a field investigation and collaborative discussion meeting with the Vietnam Institute of Geosciences and Mineral Resources (VIGMR) and Phenikaa University, as well as discussing research collaboration, student exchange, and enrollment issues with the University of Transport and Communications.

Date	Work
2023/09/4	Outbound Journey: Taoyuan City-Hanoi –Drive five hours to Sapa Mountain Area
2023/09/5	Visit Sapa local slopes, including Ban Khoang, Mong Sen, Hau Thao and Caumay ward landslides
2023/09/6	Return from Sapa to Hanoi, evening discussion with Hanoi University of Mining and Geology regarding student exchange and MOU agreement updates
2023/09/7	VIGMR, Phenikaa University, University of Transport and Communications academic collaboration discussions
2023/09/08	University of Transport and Communications



Ban Khoang debris flow site



Ban Khoang debris flow site

VIGMR Mr. Huang, University of Transport and Communications Prof. Nguyen, Thuyloi University,
Hanoi Prof. Do



Mong Sen Roadside slope failure and retaining wall construction



Hau Thao Submerged landslide and on-site monitoring equipment



Caumay ward Development of large resort in the area

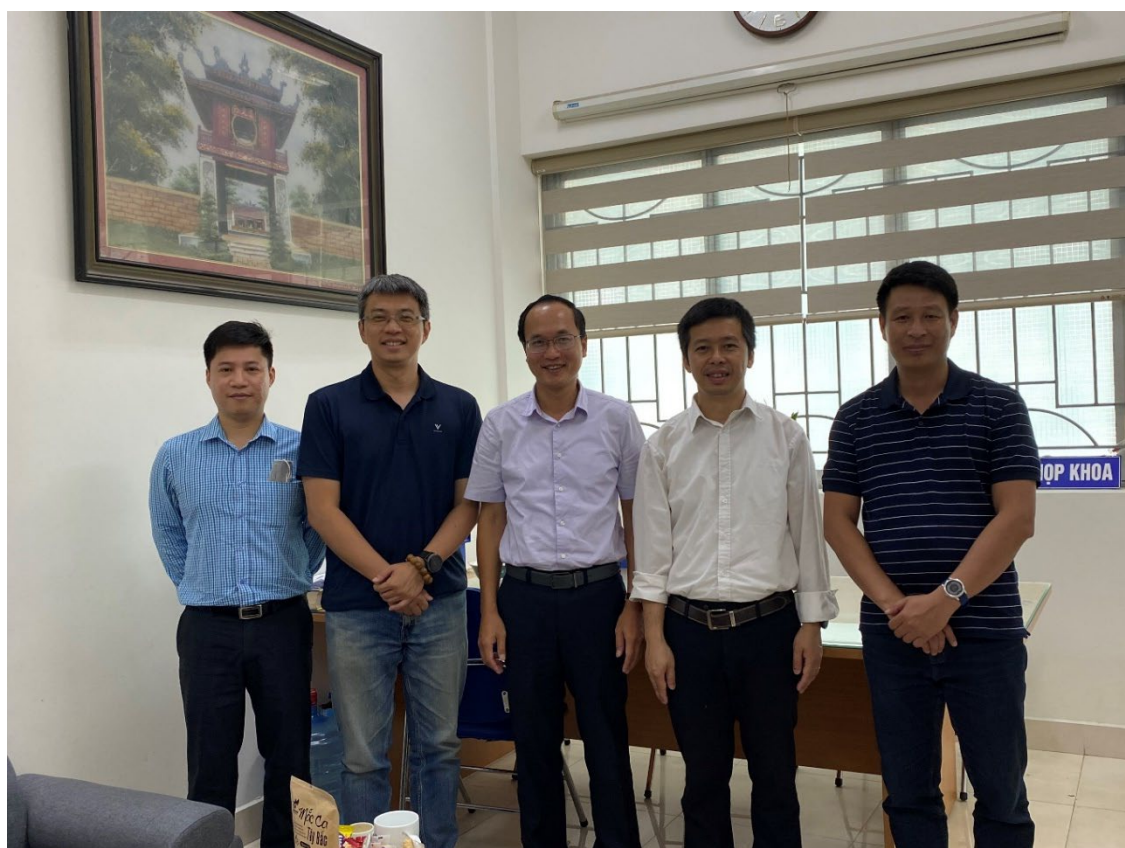


Caumay ward Construction of roadside retaining wall





VIGMR (Dr. Long) & Phenikaa University (Dr. Dinh), University of Transport and Communications (Prof. Nguyen), and Thuyloi University, Hanoi (Prof. Do) Academic and project collaboration exchange





University of Transport and Communications Laboratory Visit and Student Exchange Discussions

(2) Insights, and Suggestions

The purpose of this trip to Vietnam includes extending the academic cooperation agreement with VIGMR and Phenikaa University to on-site operations, including the landslide issues at Ban Khoang, Mong Sen, Hau Thao and Caumay ward, with the hope that future support through the bilateral program of the National Science Council, as well as new local projects in Vietnam, can facilitate actual slope safety monitoring. Currently, in addition to slope issues, the ongoing discussion of ground subsidence problems and monitoring is also gradually gaining attention, thus the scope of collaboration can be further expanded.