

# Accelerating disaster risk reduction in Thailand

## Supporting university engagement with enterprise

### Background

Thailand has been highly exposed and vulnerable to hazards such as floods, landslides, storms, droughts, tsunamis, forest fires, haze, and disease outbreaks (National Disaster Prevention and Mitigation, 2015; Disaster Management Reference Handbook, 2022). Disasters resulting from these hazards disturbed human life and the environment directly. The tsunami in 2004 caused tremendous loss of life across communities in Thailand's southern provinces along the Andaman Sea rim, where the death toll reached 5,000 and 2,000 were missing. The great flood of 2011 was Thailand's most catastrophic flooding event, with 64 out of its 77 provinces affected, including Bangkok, and over 5 million households or 16 million people. Moreover, the death toll reached 1,000 people. In 2011, landslides also resulted in 40 people being injured and 20 died. In 2013, droughts impacted almost 3 million people. Periodic storms can also cause many injuries and fatalities. In 2010, 180 people were injured and 30 people died.

In terms of economic impact, the government has to bear considerable fiscal burdens due to its role in providing financial assistance, mitigating crop losses, preventing damage to industry or damaged infrastructure, and reconstructing critical facilities, transportation and communication networks. The great flood in 2011 caused damage up to 1.43 trillion Baht. The tsunami in 2004 caused up to 85,747 million Baht of total damage. These catastrophic disasters need a governmental budget to remediate affected areas. In addition, Thailand has been confronted with air pollution (PM 2.5) for several years. It is estimated that by a 5% increase from the monthly average, the number of tourists will reduce by 110,000 in Chiang Mai and 660,000 in Bangkok. For example, a reduction in tourists in April and May resulted in economic losses of 480 million Baht for Chiang Mai and 4,000 million baht for Bangkok during the period 2014-2018.

If we are to reduce these impacts, knowledge of disaster risk reduction needs to be incorporated into the decision-making process of the policy maker, and to support the implementation of appropriate disaster risk reduction and adaptation measures. For this reason,

### Summary of recommendations

- Develop policies that encourage the business sector to invest in UEC on DRR, such as tax breaks for research and development expenses and other forms of financial support
- Create regulatory frameworks that make it easier for businesses to collaborate with universities
- Provide funding for university-enterprise collaboration (UEC) on disaster risk reduction (DRR)
- Encourage partnerships between universities, research institutions and business sectors to explore new technologies and techniques for disaster preparedness and response
- Ensure political commitment and strategic mandate by clearly stating the responsibility to UEC on DRR
- Promote innovative research in DRR through new and multidisciplinary approaches
- Promote higher education programmes to link and integrate DRR, and develop trained practitioners and researchers
- Link institutions and networks internally and to the relevant governments and regional intergovernmental organizations

networking has been identified as one of the mobilizing agents that significantly raises knowledge on the threat posed by natural and anthropogenic hazards, and that can help reduce disaster losses.

Despite its importance, most academic and research staff have focused on economic development rather than DRR, which has received less research funding. From best practices observed in other countries, it is apparent that universities and enterprises can be strengthened through several types of UEC, such as knowledge transfer, co-research, internships, and student exchanges.

This brief reports on the results of research carried out as a part of SECRA (Strengthening University-Enterprise Collaboration for Resilient Communities in Asia), a 3-year international project funded by the European Commission (EU) Erasmus+ Programme. The SECRA project has been looking at how to increase disaster resilience in Asia by promoting and improving UECs. The following discusses some of the key findings to emerge from the project.

### **Potential benefits of increasing UECs in Thailand**

- **Societal Impact:** Universities and businesses can collaborate on projects that address social issues e.g., sustainability, inequality, and environmental issues. Joint research and academic services projects can lead to the development of new technologies, products, and services that can benefit society
- **Better Student Opportunities and Outcomes:** Students can develop practical, industry-ready skills by participating in real-world projects and internships. It can help them gain relevant work experience. They can build relationships with industry professionals. It can promote entrepreneurship and innovation among students
- **Funding opportunities:** Universities may have access to government grants or other funding sources that can be used to support joint research projects with the enterprises
- **Economic Development:** When enterprises collaborate with universities, it can give them access to specialized knowledge in a specific field. This situation can create opportunities in developing new products and services that are relevant to the current situation. The economy can be developed through knowledge-based practice
- **Knowledge transfer:** Universities can share their knowledge and expertise with enterprises, while enterprises can provide real-world experience and insights to university researchers

The technology and innovation that is created from the UEC on DRR can generate profits for Thailand. The profit here is not only in term of economic capital, such as selling technological and innovative equipment, but also preventing Thailand from economic losses e.g. physical damage to property, business interruption, loss of productivity, health care costs, revenue for business in the travel industry. The economic losses from disasters can be substantial and long-lasting, particularly for vulnerable populations who may lack the resources to recover quickly.

UEC allows faster response times, better preparedness, more effective risk management, and improved recovery efforts. The collaboration between universities and businesses can lead to more innovative solutions to disaster resilience problems.

Thailand should actively share knowledge and best practices with other countries in the field of disaster resilience. UECs can help Thailand to participate in international forums and exchange information through networks and partnerships. This approach can assure that we do not leave behind other countries.

## Increasing UECs for DRR in Thailand

The SECRA project developed a multi-level framework (Figure 1) that considers the barriers and enablers for UECs in DRR at the national (macro), institutional (meso) and individual levels (micro). The framework consists of barriers and supporting factors in 4 dimensions: structural, material, relational, and cultural.

Using this framework, Chiang Mai University, Naresuan University and Mahasarakkham University carried out a survey to better understand the barriers and enablers for UECs in Thailand.



Figure 1. The UEC Relational Framework (University of Huddersfield)

The survey responses indicated that across the three levels, factors that

### **Most significant barriers to UECs on DRR in Thailand:**

- bureaucratic procedures
- inaccessible funding
- a lack of research funding
- inadequate infrastructure
- lack of partners
- lack of investors

### **Most support the development of UEC in Thailand:**

- strengthening relationships among enterprises and funding agencies
- creating collaborations between communities, universities, technical agencies and enterprises for disaster resilient communities
- creating close relationship between enterprises and funding agencies
- motivating and incentivizing universities, academics and enterprises for initiating UECs
- establishing research enterprise centers

The study found that supporting university engagement with enterprise for disaster risk reduction from relevant government agency and organization is critical and necessary. It concluded that:

- Thailand should invest in research and development to ensure that we are at the forefront of new developments in disaster resilience. This can involve partnering with universities, research institutions, business sectors to explore new technologies and techniques for disaster preparedness and response
- To mitigate the economic impact of disasters, it is important to make concrete policies that encourage the business sector invest in UEC on DRR. Governments can provide tax incentives to

businesses that invest in university collaborations for disaster resilience. This can include tax breaks for research and development expenses, as well as other forms of financial support. Governments can also create regulatory frameworks that make it easier for businesses to collaborate with universities. This can include streamlined approval processes for collaborative research, as well as other forms of regulatory support

- There is high potential for funding to support UEC on DRR. International funding agencies, such as the World Bank or the United Nations, currently provide funding for university-business collaborations focused on disaster resilience. These agencies may have specific programs that target disaster resilience in developing countries, or they may provide funding to Thailand to support collaborations that have global implications

#### **Case studies – Best Practices**

*There are several projects at Naresuan University (NU) that have been formed through the concept of UEC, encouraged by the SECRA Project. One is called the “Risk Map for Flood and Air Pollution Dispersion for Community Management”, initiated by a member of the NU SECRA team. The project has been granted approximately 200,000 THB from NU Science Park. It has enhanced the idea of university and enterprise/industry co-research by establishing tri-collaboration among Naresuan University (NU), Thai Network for Disaster Resilience (TNRD), and Phitsanulok Office of Public Works and Town & Country Planning. In this project, there are three main activities, including: (1) surveying data to create a risk map, (2) transferring basic knowledge through training workshops and producing community risk maps, and (3) disseminating community risk maps and related materials to the public using the concept of community of practice and business models from WP3 and WP4.*