



For 58 years, AIT has been serving the public as a premier institution that offers quality education in a wide range of career and technical education programs. Today, AIT is one of the leading regional postgraduate institution and actively works with public and private sector partners throughout the region and with some of the top universities in the world. Located 40 km north of Bangkok, AIT is proud to celebrate its history educating diverse student population and is committed to continuing the tradition of delivering excellence in higher education, research and outreach promoting technological change and sustainable development in the Asian-Pacific region.

Energy, Environment and Climate Change are some of the pressing issues of the 21st century. Addressing these challenges requires both systematic and multidisciplinary perspectives. To this end, the Department of Energy, Environment and Climate Change (EECC) is a newly formed department at AIT after academic administrative structural change in 2016 under School of Energy, Resources and Development (SERD).

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## **PhD Fellowship on climate change, community vulnerability and exposure to dengue in South East Asia**

The Department of Energy, Environment and Climate Change (EECC) has distinctive academic and research programs with degrees offered in Energy, Environmental Engineering and Management, Climate Change and Sustainable Development, as well as Joint degree programs.

Environmental Engineering and Management, Environmental Technology and Management, Water and Wastewater Management, Climate Change and Sustainable Development are specific programs incorporating Environmental and Human Health issues.

At EECC, students will gain exposure to a mix of courses comprising of a taught course and independent study. In addition, students are encouraged to carry out experiments, surveys, analysis or even spending time abroad gathering information. Our courses are designed to produce distinctive leaders who can shape tomorrow's energy industry.

### **The DENCLIM Research project**

Climate change is currently one of the most important emerging global concerns. It affects health directly by exposure to climatic extremes and indirectly through impacts on water quality and quantity, temperature, social infrastructure or through direct effects on secondary organisms, such as disease vectors. Assessing potential health impacts of climate change and climate variability requires understanding of the vulnerability of a population and its capacity to respond to new conditions. Laos and Thailand, the two study countries, are both vulnerable, in various ways, to the direct effects of climate change, such as floods and droughts and several indirect effects that increase their vulnerability. Dengue, Zika and chikungunya are arboviruses transmitted by mosquito vectors. Higher temperatures affect mosquito and virus development, and

rainfall may increase mosquito proliferation. So far, no comprehensive models measures climate-induced vulnerability, vector ecology, and socio-economic conditions, with disease dynamics and their impact on dengue incidence. Dengue is often mapped on a global scale, but its distribution is often driven by local spatiotemporal patterns influenced by fine-scale, socio-economic, environmental, virological, and demographic factors. In this project, disease surveillance, mosquito infestation, meteorology, socioeconomics, knowledge, attitudes and practices, and land cover will be combined with future climatic scenarios and population growth trends to predict potential changes in dengue risk factors and community vulnerabilities in border areas of these two countries. Assessing these factors are instrumental in developing adaptation strategies at local and regional levels. Outputs will add new knowledge on climate-induced vulnerability and its impact on dengue transmission. Results obtained for dengue, may also be applicable to Zika and chikungunya.

Climate change is an important global health concern. It affects human health directly, for example by high temperatures or flooding. It may also affect health indirectly through impacts on water quality and quantity, social infrastructure or through secondary organisms, such as disease vectors. A vector is an organism that transfers an infectious agent causing disease. Dengue, Zika and chikungunya are viruses transmitted by mosquitoes. Dengue is the most widespread arboviral disease in the world. It is not easy to assess the potential health impacts of climate change and climate variability. This requires knowledge on how vectors and infectious agents are affected, but also on the vulnerability of human populations and their capacity to respond to new conditions. In Southeast Asia, frequent dengue outbreaks occur with varying severity. The vulnerability and adaptive capacity differ between countries. Few comprehensive mathematical models include climate-induced vulnerability, vector ecology, and socio-economic conditions, with disease dynamics and their impact on dengue incidence. Dengue is often mapped on a global scale, but its distribution is generally driven by local patterns influenced by fine-scale, socio-economic, environmental, virological, and demographic factors.

In this project, urban and rural study sites will be selected on both sides of the Mekong River, which forms the international border between Laos and Thailand. Data on dengue cases, mosquito infestation, meteorology, land cover, socioeconomics, knowledge, attitudes and practices will be combined with future climatic scenarios and population growth trends to predict potential changes in dengue risk factors and community vulnerabilities. Project outputs will be new knowledge about climate-induced vulnerability and its impact on dengue transmission. This is important for developing adaptation strategies at local and regional levels. These results may also be applicable to Zika and chikungunya.

The project partners are Asian Institute of Technology, Thailand; Norwegian University of Life Sciences, Khon Kaen University, Thailand; University of Health Sciences, Laos;

Baldwin Wallace University, USA; Institut Pasteur, France; and Umeå University, Sweden.

More information can be found here

<https://www.nmbu.no/en/faculty/realtek/news/node/33822>.

### **Main tasks**

The doctoral research fellow will be integrated within the DENCLIM project and attached to one of the Department's scientific group and will have Professor Oleg Shipin as the main supervisor. The Department's Ph.D. program consists of a major research component of high quality aimed for publication in popular scientific journals such as PNAS, Lancet, BMJ as well as mandatory and elective courses with oral and written examinations. The student is expected to participate actively in the academic activities of the scientific group. There will be extensive periods of field- and laboratory work at collaborating institutes in Thailand and Laos. The candidate will work closely with another DENCLIM PhD fellow (on climate change modelling) based at the Norwegian University of Life Sciences, as well as with project partners at Khon Kaen University northeastern Thailand, University of Health Sciences, Vientiane, Laos, and provincial governmental health offices.

The applicant is advised to visit the following website for detailed information regarding admission requirements and regulations:

### **Academic qualifications**

#### ***Required skills:***

A successful applicant must hold a well-documented research-based Master's degree in one of the following fields of knowledge: Hydrology/ Water resources engineering/ Climatology/ Computer Engineering and have a strong interest in Entomology/epidemiology/public health.

#### ***Desired skills:***

- High-quality research leading to publications in reputable scientific journals.
- Data analysis using R, Python, Hec-GeoRAS
- Flood, drought modeling
- Strong knowledge in Geographic Information System/ Remote Sensing, and Statistics
- Strong analytical skills and ability to work with large and complex datasets, developing new methods,
- Enjoy extensive field work in rural and urban areas in Thailand and Laos
- Eager to invest in an exciting research project within an international network, and to pursue a science-based career at the interface of academia

- Ambition to develop new method in the field of study, research, and innovation.
- International collaboration and experience.
- Proficiency in English as a working language is a prerequisite and should be well-documented; knowledge of Thai and/or Lao languages is an additional asset.
- Research and/or working experience in developing countries will be considered an additional qualification.

### **Personal skills**

- Ability to work and collaborate in a multidisciplinary research field.
- Ability to create a welcoming and productive working environment for colleagues and field staffs.

### **Evaluation criteria**

The main criteria for evaluating the applicants include academic records and the scientific capacity and achievements along the above outlined preferences; particularly originality, independence, and productivity in terms of peer-reviewed publications as well as ability to work in a team. The shortlisted applicants will be invited for an interview as a part of the evaluation.

### **Employment conditions**

The selected candidate will be enrolled as a doctoral student in AIT starting from August 2018 Semester and to complete the PhD dissertation before May 2021. Additional funding for field trips, conferences are ensured.

### **Further information**

For additional information, please contact Dr. Oleg Shipin ([oshipin@ait.asia](mailto:oshipin@ait.asia)).

### **Application**

The application should be submitted via the link: "Apply for this position" on top of this web page **by March 20th 2018**. The application must include:

- Motivation letter, max 2 pages
- CV (max 2 pages) including a list of publications (if any),
- Summary of last degree thesis (1 page),
- Names and contact details of 3 referees (but no letters),

With certified copies of relevant transcripts.