

## **Graduate General Education Course (GSEC) “International Internship Program” Report 2016**

The process to finalize the proposal for the Newton Fund UK- Southeast Research Partnerships Call 2016 **“Health effects of local and transboundary air pollution: a multi country study in Vietnam, Indonesia, Thailand, Malaysia, and Philippines”**

Graduate School of Comprehensive Human Sciences,  
University of Tsukuba  
Doctoral Program in Human Care Sciences  
201430400 Tran Ngoc Dang

### **Purpose of the internship to the UK**

I undertook the internship from July 16<sup>th</sup> to August 1<sup>st</sup> in the London School of Hygiene and Tropical Medicine (LSHTM), United Kingdom under the host by Dr. Antonio Gasparini. A good part of the visiting period has been dedicated to preparing a grant application to the Newton Fund (see <http://www.rcuk.ac.uk/international/newton/rcukdipitrfnafosted/>). We successfully developed a research proposal “Health effects of local and transboundary air pollution: a multi country study in Vietnam, Indonesia, Thailand, Malaysia, and Philippines”, in which Dr. Antonio is the principal investigator (PI) from UK, and I am co-investigator (Co-I) from Vietnam. Other researchers from Indonesia, Thailand, Malaysia, and Philippines were invited to join this project, forming such a diversified international team for this application. In addition, Dr.

Antonio and I managed also to discuss some potential analyses on the “Minimum Mortality Temperature (MMT) movement – MMTmov” project, which is a collaborative study between Prof. Yasushi Honda (my supervisor in University of Tsukuba) and Dr. Antonio.

### **Summary of the proposal**

Pollution levels in South-East Asia (SEA) have significantly increased in the last few years, with annual mean levels often exceeding WHO limits by 5-10 times. A distinctive feature of the air pollution situation in the SEA region is the combination of local emissions, for instance from motorized vehicles and industry, and transboundary sources. The latter originate mostly from uncontrolled biomass burning of agricultural land or forest and from peat fires. These often cause haze events, episodes typically characterized by high levels of particulate matter and other pollutants, which have been associated with a considerable health impact in SEA countries. The development and implementation of public health policies to mitigate the impact requires scientific data on sources, on the relative contribution of local and transboundary components, and on the geographical variation of the risk within the affected area.

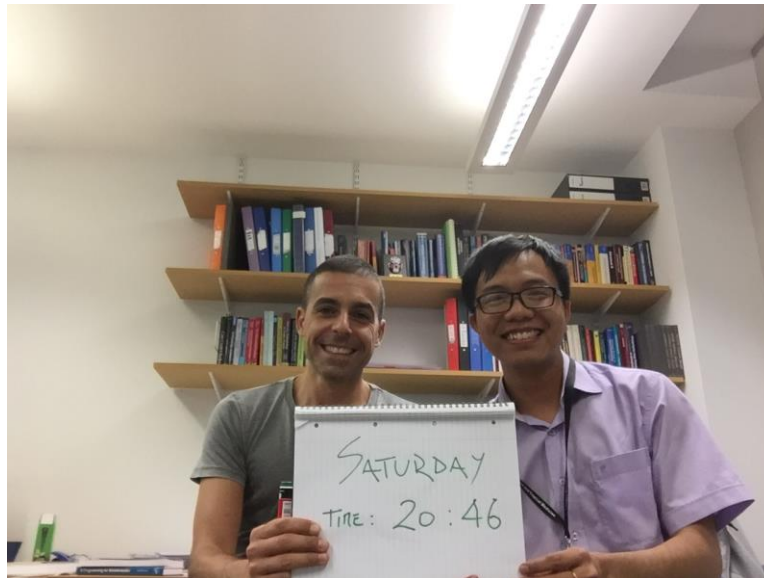
This project contributes to this research topic by offering a multi-country assessment of the health effects of ambient pollutants, landscape fires and haze events in urban cities of the SEA region, including Vietnam Thailand, Indonesia, Malaysia, and Philippines. The investigation benefits from novel analytical designs and from the use of remote sensing data from satellites. Specifically, the analysis will be based on a two-stage time series design, incorporating sophisticated statistical techniques offering a detailed characterization of the relationship between air pollution and health. Remote sensing satellite data provide a large-scale spatial and multi-temporal spectral coverage on land use/cover and pollution monitoring, complementing data obtained from monitors. This information will be used to develop spatio-temporal maps of transboundary air pollution.

The research is designed as a multilateral partnership between research teams in SEA countries and the London School of Hygiene and Tropical Medicine in UK. The UK team offers a strong expertise in methodological and applied research in environmental epidemiology, while SEA researchers have substantial experience in local investigations on the health effects of air pollution and other contaminants. This project will provide a comprehensive evaluation providing information to develop and implement both local public health policies aimed at mitigating the impacts, and regional and international efforts aimed at preventing the risk.

### **What I learnt from the internship**

This is the first hand on experience for me to apply a “big” research grant. I did daily activities of the preparation of the application under the guidance of Dr. Antonio. This unique experience is a precious one for me.

I also gained a lot of new knowledge about statistical analyses in the field of environmental epidemiology. Specifically, I learnt the two techniques namely as distributed lag non-linear model (DLNM), and multi-variate meta-analysis which are currently developed by Dr. Antonio, and has been widely use in the field. I was able also to meet other researchers in the UK and build network as a researcher.



### **Outcome of the internship and Future tasks**

As the result of this internship, a research proposal has been submitted to the Newton Fund. If the research proposal is funded, then I am expecting to go to LSHTM for one year for training and doing research. In addition, a unified statistical method has been agreed for the MMTmov project. In the near future, we are planning to write a research paper to disseminate the results of MMTmov project.

### **Acknowledgements**

I would like to thank GEEC for the opportunity to carry out this international internship program. I also wish to thank Dr. Antonio Gasparrini for hosting, and guiding me during the visiting period in LSHTM. Lastly, I thank my Professor, Dr. Yasushi Honda for encouraging me to do internship in the UK to improve my knowledge and future career as a researcher.