
TRAINING COURSE ON VULNERABILITY ASSESSMENT FOR CLIMATE CHANGE ADAPTATION: THE SPATIAL PLANNING PERSPECTIVE

**17 October 2008
Danau Golf Club
Universiti Kebangsaan Malaysia**

Organiser:
Southeast Asia Disaster Prevention Research Institute
(SEADPRI),
Universiti Kebangsaan Malaysia (UKM)

Rapporteur's Report

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INTRODUCTION

The Training Course on ‘Vulnerability Assessment for Climate Change Adaptation: The Spatial Planning Perspective’ was organised on 17 October 2008 by the newly established Southeast Asia Disaster Prevention Research Institute (SEADPRI), Universiti Kebangsaan Malaysia (UKM). The training aimed to give an insight of the vulnerability and adaptation assessment of climate change from a spatial planning perspective. A total of 35 participants, who are mainly researchers from the government agencies, research institutions and academia involving in vulnerability and adaptation research in the spatial planning and other sectors, attended the training. Datin Paduka Dr. Halimatun Saadiah Hashim chaired the training course.

Paper One: Climate Change Projection and Assessment of Vulnerability and Adaptation in Malaysia

Presented by Ir. Hj. Ahmad Jamalluddin Shaaban, National Hydraulic Research Institute Malaysia (NAHRIM).

The paper presented consists of a brief introduction of NAHRIM's involvement in climate related research, including the observation and projection of global and local climate change, followed with the results of its climate change study. Ir. Hj. Ahmad Jamalluddin also introduced NAHRIM's future hydroclimate database to the participants, before presenting the vulnerability assessment and adaptation options for Malaysia.

In 2000 there was a National Water Resources Study for Peninsular Malaysia. It was a master plan for the development of water resources in Peninsular Malaysia for 2000 – 2050; however the study did not take into account the relevant climate change aspect. Meanwhile, the Initial National Communications submitted in 2000 to the United Nations Framework Convention on Climate Change (UNFCCC) urged for a regional model for finer resolution of global climate simulations.

Ir. Hj. Ahmad Jamalluddin showed the warming of climate system is unequivocal and effects of climate change with recent studies results. Extensive Intergovernmental Panel on Climate Change (IPCC) findings on global climate projection were drawn. He then showcased examples of the observed climate change for the global and Malaysia scenario focusing on the surface temperature and sea level. The result is based on the IPCC's Fourth Assessment Report 2007 and the National Coastal Vulnerability Index Study completed in 2007. The global surface temperature was observed with an increase of 0.74°C from 1906 to 2005. Meanwhile for Malaysia scenario, the surface temperature increased in the range of 0.49°C to 0.91°C from 1968 to 2002. The rise in Malaysia sea level rise based on the national study was 1.25 mm/year from 1986 to 2006.

A regional hydrologic-atmospheric model of Peninsular Malaysia was developed by downscaling global climate change simulation data. This model enables the researchers to quantify the impact of the complex topographical and land surface features of Peninsular Malaysia on its climate conditions. Ir. Hj. Ahmad Jamalluddin explained the configuration of this model and presented the simulated and observed precipitation and streamflow. He then discussed the study results on air temperature, precipitation and riverflow of several regions in the Peninsular Malaysia.

Lastly, Ir. Hj. Ahmad Jamalluddin introduced the NAHRIM Future Hydroclimate Database which consists of five main parameters on precipitation, evapotranspiration, soil water storage, surface temperature and streamflow. Each parameter will have data sets on simulated past data from 1984 to 1993 and simulated future data from 2025 to 2035 and 2041 to 2050. He then showcased sector assessments of climate change impacts with

recommended adaptation actions for water resources, agriculture, public health, coastal, energy and biodiversity sector.

Paper Two: Socio-Economic Determinants of Vulnerability and Adaptation to Climate Change

Presented by Dr. Rawsha Ara Begum, Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM).

The paper explained the definition of adaptation and vulnerability with a global scenario on the distribution of risk and vulnerable communities, adaptation approaches, framework and the economic and social determinants. Lastly, Malaysia as a case study for the topic was highlighted.

Dr. Rawshan presented the definition of vulnerability and adaptation based on the Fourth Assessment Report of the IPCC. With those definitions, she highlighted the study result from the UNDP Human Development Report 2007 which showed the developing countries are suffering higher disaster risks and more vulnerable to climate change. In addition, developing countries, in general, have lower social insurance compared to developed countries. The most vulnerable communities are people such as indigenous and native, nomadic, elderly, children, lower income, homeless and etc. Their vulnerability to climate change depends on factors such as age distribution, population density, income level and distribution, food availability and other social and economic related factors. The sources of vulnerability include, among others, rapid rates of urbanisation, high levels of poverty, existing land degradation and desertification, existing water scarcity and absence of insurance infrastructure.

According to the IPCC's Fourth Assessment Report, there are different scales of adaptation approaches. These are national and regional-level responses, international organisation and agencies-level responses, individual-level responses and sectoral-level responses such as health system adaptation. Dr. Rawshan pointed out that adaptation measures are weak in developing countries though it is a good investment. She then gave an overview of national and regional framework for adaptation and an example of vulnerability and adaptation assessment focusing on health sector. She then explained some steps for establishing criteria for economic and social determinants. The collaboration between government and stakeholders for vulnerability approach was also elaborated in her presentation.

Malaysia as a case study was presented on several perspectives. The per capita greenhouse gas (GHG) emissions in Malaysia had increased from 4.21 tCO₂ to 6.29 tCO₂ since 1994 to 2001. The energy sector recorded as the highest source. In addressing the climate change issue, Malaysia government has taken several initiatives. Among these initiatives are the ratification of UNFCCC in 1994 and Kyoto Protocol in 2002, and the establishment of National Focal Point and National Committee on Climate Change. The initiative was later raised to higher agenda when a Cabinet Committee on Climate Change chaired by the Malaysia Prime Minister was established in early 2008.

Dr. Rawshan informed that Malaysia had submitted her Initial National Communication in 2000 and currently is preparing the Second National Communication. Some adaptation and mitigation programmes planned under the Ninth Malaysia Plan (2006 – 2010) were drawn to attention. The possible climatic change and implications in Peninsular Malaysia by 2041 – 2050 were also presented. Lastly, Dr. Rawshan suggested few socio-economic impacts study which includes the poverty map to determine vulnerable groups. She further urged the need for balancing adaptation and mitigation to address climate change.

Training Session One: Integrating Natural Hazards and Climate Change Effects into Spatial Planning Practices

Conducted by Dr. Philipp Schmidt-Thome, Geological Survey Finland.

Dr. Philipp started the session by asking the participants to list the natural hazards that are relevant for spatial development. The activity followed by categorising the difference between natural hazards and natural processes that are potentially hazardous. While natural hazards include drought potential, earthquakes, floods, forest fires, landslides and others, the difference between natural hazards and hazardous process eventually can be identified through time scales which range from seconds to years. He then categorised the spatially relevant natural hazards into geo-hazards and hydro-meteorological hazards. According to this categorisation, all hydro-meteorological hazards such as avalanche, drought, extreme temperature, flood, forest fire, storms and storm surges are affected by climate change. However, this situation does not happen on geo-hazards except for landslides. Several natural hazards maps were then highlighted.

Second task of the training was to weigh the spatially relevant importance of several natural hazards. The method used was Delphi approach and the natural hazards given were droughts, extreme temperatures, earthquakes, floods, forest fires, landslides, storms or cyclones, storm surge, tsunami and volcanic eruptions. The exercise was then followed by defining the terms for risk and vulnerability. Later, Dr. Philipp gave some examples of risk and vulnerability definitions. He also showed some indicators of risk for the integrated vulnerability concept. Then a vulnerability map was developed that reflects different degree of vulnerability. The risk is then defined by putting the hazard and vulnerability into a formula. This formula presented nine classes of risk that allowed an aggregated risk map developed.

Training Session Two: Climate Change Adaptation and Water – Examples of Facing Multiple Challenges from Sea Level Rise to Water Scarcity from a Planning Perspective

Conducted by Dr. Philipp Schmidt-Thome, Geological Survey Finland.

The second session of the training programme started with an example drew from Thailand on the water related challenges of natural hazards and climate change. The case study highlighted the spatial planning perspective. Dr. Philipp then showed the overall losses and insured losses that had increased due to catastrophe phenomena since 1950. By taking India as example, the weather-related natural catastrophes caused losses had risen since the early 1990s. These weather-related natural catastrophes were mainly the flood and cyclone.

Dr. Philipp then explained the climate models, forcing scenarios and global change scenarios which are frequently used in explaining climate change. He gave a few examples of how climate change had been communicated to public. He also requested for opinion from participants on their understanding of climate change impacts on regional development. Case studies of sea level rise and flood and their management were then presented and explained. In addition, Dr. Philipp also gave example of causes to coastal erosion and coastal sea level rise other than impact from climate change.

Dr. Philipp concluded that communication is an important element for ensuring effectiveness of measures. He pointed out the integration of financially reasonable natural hazard and climate change adaptation measures into development. He stated in order to raise the awareness on natural hazard and climate change impacts comprehensive scenarios are needed. The existing practices of spatial planning should further be developed rather than reinventing spatial planning for tackling the issue.

ANNEX I: PROGRAMME

TRAINING COURSE ON “VULNERABILITY ASSESSMENT FOR CLIMATE CHANGE ADAPTATION: THE SPATIAL PLANNING PERSPECTIVE”

17 October 2008

Danau Golf Club, Universiti Kebangsaan Malaysia *

- 0830 Registration
- 0900 Welcoming Remarks – Prof. Dr. Joy Jacqueline Pereira, Deputy Director of Southeast Asia Disaster Prevention Research Institute (SEADPRI) Universiti Kebangsaan Malaysia (UKM)
- Chairperson: Datin Paduka Dr. Halimaton Saadiah Hashim, Institute for Environment and Development (LESTARI), UKM
- 0910 Presentations by Local Agencies:
- Climate Change Projections and Assessment of Vulnerability and Adaptation in Malaysia, Ir. Hj. Ahmad Jamalluddin Shaaban, Director of Research Center for Water Resources, National Hydraulic Research Institute Malaysia (NAHRIM)
 - Socio-Economic Determinants of Vulnerability and Adaptation to Climate Change, Dr. Rawshan Ara Begum and Raja Datuk Zaharaton Raja Zainal Abidin, LESTARI UKM
- Discussion
- 1000 Break
- 1030 Training Session by Dr. Philipp Schmidt-Thomé, Geological Survey of Finland:
- Identification of Natural Hazards and Climate Change Impacts Relevant for Spatial Development
 - Opportunities and Constraints of Vulnerability and Risk Assessment
- Discussion
- 1200 Lunch
- 1430 Continuation of Training Session
- Development of Hazard and Climate Change Impact Maps for Decision Making
 - General Ideas on Stakeholder Communication Processes and Risk Prevention
- Discussion
- 1700 End of Training

ANNEX II: LIST OF SPEAKERS, TRAINER AND PARTICIPANTS

No.	Name	Organisation
Chairperson		
1.	Datin Paduka Dr. Halimaton Saadiah Hashim Principle Fellow	Institute for Environment and Development (LESTARI), UKM
Speakers		
1.	Ir. Hj. Ahmad Jamalluddin Shaaban	Pusat Kajian Sumber Air, Institut Penyelidikan Hidraulik Kebangsaan Malaysia (NAHRIM)
2.	Dr. Rawshan Ara Begum Post-Doctoral Fellow	Institute for Environment and Development (LESTARI), UKM
Trainer		
1.	Dr. Philipp Schmidt-Thome	Geological Survey of Finland
Participants		
1.	Prof. Dr. Joy Jacqueline Pereire	Southeast Asia Disaster Prevention Research Institute (SEADPRI–UKM)
2.	Dr. Saim bin Suratman <i>Pengarah Pusat</i>	Pusat Kajian Sumber Air, Institut Penyelidikan Hidraulik Kebangsaan Malaysia (NAHRIM)
3.	Hj Mohd. Fauzi bin Mohamed <i>Pengarah Bahagian</i>	Pusat Kajian Sumber Air, Institut Penyelidikan Hidraulik Kebangsaan Malaysia (NAHRIM)
4.	Hjh. Zainab binti Hashim <i>Pegawai Penyelidik Kanan</i>	Pusat Kajian Sumber Air, Institut Penyelidikan Hidraulik Kebangsaan Malaysia (NAHRIM)
5.	Mohd. Afzaihelmi bin Mohd Ariff Research Officer	Pusat Kajian Sumber Air, Institut Penyelidikan Hidraulik Kebangsaan Malaysia (NAHRIM)
6.	Engku Elini Engku Ariff <i>Pegawai Penyelidik</i>	Malaysian Agricultural Research and Development Institute
7.	Dr. Nik Muhammad Nizam bin Nik Hassan	Institut Penyelidikan Perubatan (IMR)
8.	Yusoff Muda	Jabatan Perhutanan Semenanjung Malaysia
9.	Mohan Kumar Summathuria	Jabatan Meteorologi Malaysia
10.	Isalamiah Deni Penolong Pengarah	Jabatan Pengairan dan Saliran Malaysia
11.	Siow Suan Neo <i>Ketua Penolong Pengarah</i>	Jabatan Perancangan Bandar dan Desa (JPBD) – Bhg. Rancangan Fizikal Negara
12.	Zalina Abdullah	Jabatan Alam Sekitar, Putrajaya
13.	Mohd. Ali bin Abu Bakar <i>Ketua Penolong Pengarah</i>	Jabatan Perancangan Bandar dan Desa (JPBD)
14.	Chee Ping Ngang <i>Ketua Penolong Pengarah</i>	Jabatan Perancangan Bandar dan Desa (JPBD)
15.	Lavanya Rama Iyer	NRE/UNDP – NC2 Project Coordinator
16.	Kamalrudin bin Mohamed Salleh	Universiti Kebangsaan Malaysia (UKM)

17.	Prof. Datin Dr. Asmah Ahmad	Universiti Kebangsaan Malaysia (UKM)
18.	Azhar Ab. Halim	Universiti Kebangsaan Malaysia (UKM)
19.	Dr. Mazrura Sahami	Universiti Kebangsaan Malaysia (UKM)
20.	Prof. Madya Dr Muhammad Barzani Gasim	Pusat Pengajian Sains Sekitaran dan Sumber Alam, Fakulti Sains dan Teknologi UKM
21.	Encik Zaini Sakawi	Pusat Pengajian Sosial, Pembangunan dan Persekitaran Fakulti Sains Sosial dan Kemanusiaan, UKM
22.	Prof Dr. Lee Yook Heng	School of Chemical Science & Food Technology Faculty Science & Technology (UKM)
23.	Prof. Madya Dr. Tajul Anuar	Institute for Environment and Development (LESTARI)
24.	Jenne Lajuni	Institute for Environment and Development (LESTARI)
25.	Tan Ching Tiong	Institute for Environment and Development (LESTARI)
26.	Koh Fui Pin	Institute for Environment and Development (LESTARI)
27.	Lim Choun Sian	Institute for Environment and Development (LESTARI)
28.	Rasyidah Abdul Karim	Institute for Environment and Development (LESTARI)
29.	Pauline	Institute for Environment and Development (LESTARI)
30.	Mohd. Fakrulnizam	Institute for Environment and Development (LESTARI)
31.	Abul Quasem Al-Amin	Institute for Environment and Development (LESTARI)