Forum SEADPRI–UKM 2014
"Pemantapan Pengurusan Risiko dan Bencana Negara – Pengalaman Dua Dekad"
16 Disember 2014, Puri Pujangga, UKM Bangi

by Mohd Khairul Zain Ismail

Forum SEADPRI adalah merupakan salah satu program flagship SEADPRI-UKM yang diadakan setiap tahun. Forum SEADPRI-UKM 2014 telah memasuki siri yang ke-6 sejak penubuhannya pada tahun 2009. Forum SEADPRI-UKM 2014 ini telah diadakan pada 16 Disember 2014, bertempat di Bilik Pujangga 5, Puri Pujangga, UKM Bangi. Forum ini adalah anjuran bersama di antara SEADPRI-UKM dengan kerjasama Majlis Keselamatan Negara (MKN), Jabatan Perdana Menteri, dan juga Persatuan Pengurusan Risiko dan Insurans Malaysia (MARIM). Penceramah pada Forum SEADPRI-UKM 2014 kali ini adalah YBhg. Datuk Che Moin bin Umar. Beliau adalah merupakan Felo Kehormat SEADPRI-UKM sejak tahun 2011. YBhg. Datuk merupakan mantan Timbalan Setiausaha Majlis Keselamatan Negara, Jabatan Perdana Menteri, Malaysia. Beliau telah bergiat secara aktif dalam bidang berkaitan pengurusan risiko dan bencana, samada di peringkat kebangsaan dan antarabangsa. Pengalaman luas beliau di dalam bidang pengurusan risiko dan bencana membolehkan beliau dipilih menjadi Ahli Jawatankuasa Pengurusan Bencana ASEAN, Setiausaha Jawatankuasa Pengurusan Bencana Kebangsaan Malaysia, Pengerusi Jawatankuasa Kerja Kumpulan Pengurusan Bencana Malaysia-Thailand, Pengerusi Jawatankuasa Teknikal Keselamatan Masyarakat, Kumpulan Penyelarasan Sub Wilayah ASEAN bagi Aturan Memadam Kebakaran untuk Borneo & Sumatera (SRAFs), dan juga Naib Pengerusi kepada Kumpulan Kerja *Intergovernmental Coordination Group for The Indian Ocean Tsunami Warning and Mitigation System (ICG-IOTWS)*.

Forum ini diadakan adalah merupakan rentetan kepada pengumuman Malaysia dengan melancarkan penubuhan "Platform Kebangsaan & Pelan Tindakan Bencana Negara (MyDRR)", pada Persidangan Fourth Session of the Global Platform for Disaster Risk Reduction 2013 (GPDRR), di Geneva, Switzerland, pada 19-23 Mei 2013 yang lalu. Persidangan ini adalah yang terbesar di dunia di dalam bidang pengurusan bencana. Selain itu, Menteri di Jabatan Perdana Menteri, Y.B. Dato' Seri Dr. Shahidan Bin Kassim juga telah menegaskan mengenai komitmen negara di dalam menyelaraskan pengurusan bencana negara, pada Persidangan 6th Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR), pada 22-26 Jun 2014 yang lalu, di Bangkok, Thailand. Persidangan Menteri-Menteri Asia Tenggara ini juga adalah yang terbesar di rantau ini. Justeru, hasil jaringan kerjasama SEADPRI-UKM dan Majlis Keselamatan Negara (MKN) sejak tahun 2008 telah berjaya membentuk pasukan yang strategik di dalam penubuhan Platform Kebangsaan & Pelan Tindakan ini. Untuk makluman, dua sesi perbincangan bersama pihak berkepentingan telah diadakan pada 24-25 Oktober 2013 (bersama agensi kerajaan) dan juga pada 28 Ogos 2014 (bersama sektor swasta, industri & NGO) yang lalu, di dalam mendapatkan input dan cadangan tambahan bagi memperkasa Dasar dan Pelan Tindakan pengurangan risiko bencana negara. Justeru, hasil perkongsian pengalaman beliau di dalam Forum SEADPRI-UKM 2014, terutamanya di dalam pengurusan risiko dan bencana selama dua dekad akan memperkukuhkan lagi Pelan Tindakan Bencana Negara, yang sedang diperhalusi oleh pihak MKN.

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ISSN 2180 - 1142

Nombor 11 Number

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JANUARY 2015

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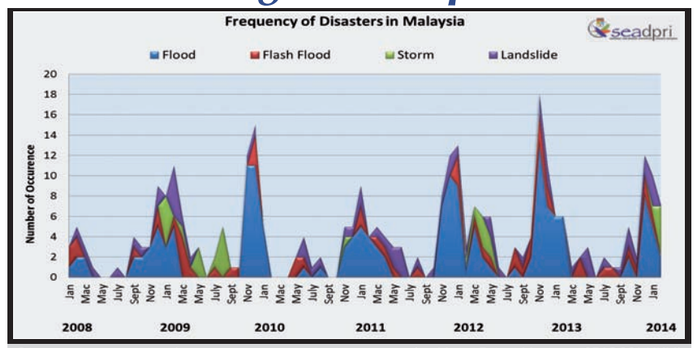

Disaster data compiled from newspapers and other sources (by Mohd Faizol Markom, SEADPRI-UKM)

Banjir baru-baru ini di Pantai Timur Malaysia telah menjadi bencana paling buruk yang pernah berlaku sejak tiga dekad yang lalu di dalam negara, menyebabkan lebih daripada RM 1 bilion kerugian dari segi kerosakan dan kehilangan pendapatan serta menyebabkan kesusahan dan kesengsaraan kepada rakyat yang terjejas. Walaupun banjir telah dianggap sebagai 'perkara biasa' yang berlaku di Malaysia, dan mekanisme tindak balas ketika bencana adalah di dalam keadaan bersedia, akan tetapi skala dan tahap banjir pada tahun ini telah menyebabkan sistem ini gagal, dan dengan itu rakyat telah terkandas dan terjejas tanpa bantuan kecemasan seperti makanan, pakaian bersih, akses kepada air bersih dan bantuan perubatan. Kejadian yang sama seperti tanah runtuh di Cameron Highlands dan baru-baru ini di Petaling Jaya juga menunjukkan skala peningkatan tahap iklim berkaitan bencana.

Kejadian-kejadian yang telah berlaku ini menekankan keperluan untuk mempertingkatkan mekanisma pemantauan bencana yang lengkap, bukan sahaja untuk mengesan berlakunya bencana, akan tetapi melalui pemantauan dan mengenal pasti petunjuk yang menjurus kepada peristiwa-peristiwa ini, selain meletakkan mekanisme tempatan yang membolehkan anggota penyelamat dan kecemasan untuk bertindak balas dengan segera kepada situasi ini, justeru itu ianya akan mengurangkan penderitaan manusia dan kerosakan harta benda sementara menunggu mekanisme bantuan sokongan yang lebih besar. Lebih penting lagi, bencana ini telah menunjukkan perlunya untuk agensi-agensi negeri dan tempatan untuk membina keupayaan mereka di dalam melaksanakan prosedur operasi standard semasa bencana dengan berkesan, seperti yang ditetapkan oleh Majlis Keselamatan Negara.

SEADPRI-UKM sedang memberi sokongan teknikal kepada Pejabat Penasihat Sains Y.A.B. Perdana Menteri dalam mewujudkan penyusunan institusi yang akan memudahkan penyaluran input sains dan teknologi bagi pengurangan risiko bencana dengan cara yang sistematik dan bersepadu kepada Majlis Keselamatan Negara. Usaha ini adalah sebahagian daripada Sains untuk Tindakan (S2A) yang diilhamkan oleh Y.A.B. Perdana Menteri Malaysia dan dilancarkan pada tahun 2014.

The recent floods in the East Coast of Malaysia has been the worst that the nation has experienced in the last three decades reportedly causing more than RM 1 billion in damage and loss of income as well as immeasurable hardship and misery to affected citizens. While flooding has been considered a 'normal' occurrence in Malaysia and response mechanisms are in place, the scale and severity of this year's flooding overwhelmed these systems and their failure to function left victims stranded without emergency relief such as food, clean clothing, clean water and access to medical aid. Similar incidences such as landslides in Cameron Highlands and, more recently, in Petaling Jaya are also indicative of the increasing scale and severity of localized climate related disasters.

These incidents have highlighted the need for an enhanced and complete disaster monitoring mechanism that is able not only to predict the occurrence of such disasters, through the monitoring and identification of indicators that precede these events, but also put in place local mechanisms that allow for emergency and rescue personnel to respond immediately to these situations, thereby reducing human suffering and damage to property before larger support mechanisms respond. More importantly, this event has demonstrated the need for state and local agencies to build their capacity in order to implement effectively, standard operating procedures during disasters as set by the National Security Council.

SEADPRI-UKM is providing technical support to the Office of the Science Advisor to the Hon. Prime Minister in establishing institutional arrangements that would facilitate the channelling of science and technology inputs for disaster risk reduction in a systematic and coordinated manner to the National Security Council. This effort is part of the Science to Action (S2A) Programme inspired by the Hon. Prime Minister of Malaysia and launched in 2014.

PROF. DR. JOY JACQUELINE PEREIRA
Penyelaras Program Bencana Iklim
Coordinator of Climatic Hazards Programme

Climatic Hazards Programme

Asia–Pacific Climate Change Adaptation Forum 2014

1-3 October 2014, PWTC, Kuala Lumpur

by Dr. Mohammad Imam Hasan Reza, Research Fellow

The opening speech was delivered by YB. Dato' Mah Siew Kiong, Minister at the Prime Minister's Department, on behalf of the Prime Minister of Malaysia, YAB Dato' Sri Mohd Najib bin Tun Haji Abdul Razak. *(Photo by Mohd. Redzuan Zulkifly)*

The 4th Asia-Pacific Climate Change Adaptation Forum, held from 1-3 October 2014 at the Putra World Trade Centre (PWTC), Kuala Lumpur, was hosted by the Office of the Science Advisor to the Prime Minister of Malaysia, with technical support from the Universiti Kebangsaan Malaysia's Southeast Asia Disaster Prevention Research Initiative (SEADPRI -UKM). The Forum was organized by the Asia Pacific Adaptation Network (APAN), a collaborative network of the United Nations Environment Programme, the Institute for Global Environmental Strategies, the Regional Resource Centre for Asia and the Pacific, and the Stockholm Environment Institute. The Forum was supported by the Ministry of the Environment, Japan and other key international partners. National Partners and Session Partners from Malaysia provided local support.

The Forum brought together more than 500 policy-makers, scientists, donors, researchers, and representatives from NGOs, international organizations and regional intergovernmental bodies from around 50 countries in Asia and the Pacific, and beyond. Besides the plenary sessions and panel discussions, other side events and a marketplace helped to promote greater interaction.

The Forum was structured around the theme "New Partnerships for Resilient Development: Government, Business and Society" and it focused on the following five topics:

1. Mainstreaming and transformative change: policy; trade and finance; technology/knowledge transfer; public–private partnerships; ethics and values; gender sensitive development; community involvement; and poverty alleviation;
2. Development and the food-water-energy nexus: agricultural land; water use; water resources; infrastructure/reconstruction; private investment; and energy/water/food security;
3. Disaster risk reduction and human security: loss and damage; insurance; risk communication; risk management and adaptation; reconstruction; health; conflict; migration; and poor and vulnerable groups;
4. Forestry, biodiversity and ecosystems change: livelihoods; traditional ecological knowledge; conservation; and community-based and ecosystem-based adaptation;
5. Cities affected by coastal development and sea-level rise: urbanization; tourism; heat waves; mangrove protection; sea-level rise; and Small Island Developing States.

The Forum provided an excellent opportunity for a range of actors to share their experiences and efforts addressing and adapting to climate change, which, in turn, generated new opportunities for collaboration. It also stimulated many discussions about shifting adaptation to be more cross-sectoral and integrated into the broader scope of sustainable development. Some sessions discussed transformative change and others dealt with linkages among food, water, energy, disaster risk reduction, human security, biodiversity, cities, and coastal development. The Forum also demonstrated that adaptation calls for multi-stakeholder engagement. While government agencies are the ones taking the leading roles, there is a lot more that needs to be done and that can be done with other stakeholders, including development agencies, the private sector, academia and research communities, and civil society organizations. Solutions to specific adaptation challenges are available but need to be shared, made accessible, and affordable. Science and practical experience are both important sources of knowledge relevant to adaptation. The Forum provided opportunities for knowledge sharing as well as for strategizing on improving knowledge sharing beyond the Forum.

Datuk Mohamed Thajudeen Abdul Wahab, Secretary of the National Security Council, Prime Minister's Department, highlighted the central role of disaster management as a first step to climate change adaptation at the Forum.

Activities

Workshop on IPCC Fifth Assessment Report (IPCC–AR5)

4 July 2014, Putrajaya Shangri-La Hotel

by Koh Fui Pin

The Workshop on the IPCC AR5 was organised by the Ministry of Natural Resources and Environment Malaysia (NRE), IPCC, and Universiti Kebangsaan Malaysia's Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM) in partnership with the British High Commission and the United Nations Development Programme (UNDP) Malaysia. The Workshop was organised in conjunction with a meeting of IPCC authors held in Putrajaya from 30 June – 3 July 2014 to work on the Synthesis Report that will integrate the findings of the multi-volume AR5. The Synthesis Report is due to be finalised in October 2014. The objectives of the Workshop were to: (1) highlight findings of the IPCC's three Working Groups; (2) give special focus to topics such as forestry, sea-level change, food security and responses to climate change; and (3) examine the role of the IPCC and how its work can be improved. The Workshop was attended by experts from various ministries, institutes, departments, agencies including non-governmental agencies (NGOs), and universities.

The workshop began with remarks delivered by the IPCC Chair, Prof. Rajendra Kumar Pachauri. It was officiated by the Minister of Natural Resources and Environment, YB. Datuk Seri G. Palanivel, who was represented by Y.Bhg. Datuk Rahim Nik, Deputy Secretary-General. The Workshop programme was divided into three sessions. In Session 1, an overview of key findings was provided by the Co-Chairs from the three Working Groups of IPCC. In Session 2, three prominent scientists who were also the Coordinating Lead Authors shared their insights and perspectives on sea-level change, forestry and food security. In Session 3, an economist and a sociologist presented their perspectives on responses to climate change, and the Vice-Chair of IPCC also presented a brief history of the development of IPCC and shared his views on serving the needs of members in the future. The key messages from the workshop is that the causes and impacts of climate change were very clear, and efforts from all individuals are necessary to address the challenges. It is important that the findings of IPCC are disseminated to a wider audience to increase public awareness and preparedness to deal with the challenges. However, response from the invited participants, particularly the NGOs and local authorities, was not encouraging, and they were also not forthcoming in responding to requests to share the adaptation projects. This lack of response is particularly worrying because local authorities and NGOs play an important role in adaptation. Another disappointment was that the media was not present at the workshop.

It is hoped that the response to the upcoming Asia-Pacific Climate Change Adaptation Forum to be held in PWTC, Kuala Lumpur from 1-3 October 2014 will be more encouraging. The theme of the Forum is New Partnerships for Resilient Development: Government, Business and Society. Without the active participation of all Malaysians, particularly the local authorities, NGOs, young researchers, and the private sector, adaptation actions in Malaysia can be expected to be particularly challenging. It is becoming all the more urgent to make greater efforts to create awareness and concern among Malaysians on the need for planned responses and adaptation to climate change.

Expert Consultation Workshop on Evidence for Disaster Risk Reduction and Climate Change Adaptation Effectiveness of Risk Insurance: Challenges and Opportunities

4-5 July 2014, Puri Pujangga Hotel, UKM Bangi

by Md. Shahin Mia

The Expert Consultation Workshop on Evidence for Disaster Risk Reduction and Climate Change Adaptation Effectiveness of Risk Insurance: Challenges and Opportunities was jointly organised by the Institute for Global Environmental Strategies (IGES), the Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM), EEMAUSAM Weather Risk Management Services Private Limited, International Agriculture for Development (IAFD) and the University of the Philippines (UPLB) on 4-5 July 2014 at Puri Pujangga Hotel , Universiti Kebangsaan Malaysia (UKM), Bangi, Malaysia. The purpose of the workshop was to assess the benefits and costs accrued through insurance, to evaluate barriers limiting insurance penetration, to identify interventions for greater insurance penetration leading to realisation of climate change adaptation and disaster risk reduction, and to identify alternative approaches to insurance for targeting those who cannot be reached through insurance. The Workshop was officiated by Prof. Dr. Joy Jacqueline Pereira, Principal Fellow of SEADPRI-UKM.

The workshop was attended by experts, researchers, and officials of donor agencies and NGOs from various countries, mainly from the Asia Pacific region. A total of 18 papers were presented in five sessions: (1) overview session: effectiveness of insurance programs; (2) country policy environments and issues limiting scaling up insurance; (3) indicators for overcoming technical, policy and affordability bottlenecks to scale up insurance; (4) NGO experiences in implementing insurance products in agriculture with a focus on measuring the effectiveness of the insurance products; (5) methodologies for assessing insurance effectiveness. The key activity was to identify the indicators for assessing the effectiveness of insurance initiatives.

The Workshop focused on various aspects of insurance effectiveness, challenges and opportunities. The issues discussed during the workshop include the effectiveness of insurance in terms of climate change adaptation (CCA) and disaster risk reduction (DRR), the barriers (such as technical, policy, and affordability) to scale up insurance at community level, particularly for the poor and vulnerable, and the measures for overcoming these barriers from the aspects of the government and the insurance industry. The discussion also focused on the experiences of NGOs and donor agencies in implementing insurance programmes in the agricultural sector. Finally, a number of indicators were identified for assessing and comparing the effectiveness of different insurance products and other risk management options. During the workshop, the experts, researchers and practitioners provided insights on various aspects of bottlenecks and the effectiveness of insurance programmes that might be useful for different stakeholders - insurance beneficiaries, delivery agencies (NGOs, MFIs, and the insurance industry) and governments to scale up insurance at the community level.

Activities

Workshop on Atmospheric Chemistry and Climate Change in Asia

14-15 July 2014, University of Malaya, Kuala Lumpur

by Mohd Khairul Zain Ismail

Workshop on Atmospheric Chemistry and Climate Change in Asia 2014 (WACCCA 2014)
14-15 July 2014, University of Malaya, Kuala Lumpur, Malaysia

The Workshop on Atmospheric Chemistry and Climate Change in Asia (WACCCA 2014) was jointly organised by Universiti Kebangsaan Malaysia (UKM), University of Malaya (UM), the Cambridge Malaysian Education and Development Trust (CMEDT), the Malaysian Commonwealth Studies Centre, Cambridge (MCSC), and the Asian Network on Climate Science and Technology (ANCST), in collaboration with the Institute of Climate Change UKM, the Institute for Environment and Development (LESTARI-UKM), the Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM), the Institute of Ocean and Earth Sciences (IOES-UM), the University of Cambridge, and the National Council of Professors. It was held from 14-15 July 2014 at the Kompleks Pengurusan Penyelidikan dan Inovasi, University of Malaya, Kuala Lumpur, Malaysia. It was attended by many local and international researchers and students, and academics from various countries, mainly from Asia. The Workshop was officiated by Prof. Dr. Awang Bulgiba Awang Mahmud, Deputy Vice Chancellor of the University of Malaya.

The Workshop provided an opportunity for discussion and interaction between researchers, experts and environmental organisations from Asia and the rest of the world, and to share this knowledge and expertise to expand research and education on climate change. Research papers and posters presented were on all aspects of atmospheric chemistry and air quality including field and laboratory measurements, chemical transport modelling and other research-related focuses on the study of atmospheric chemistry in Asia.

The Workshop was organised in three sessions: (1) Aerosol and Compositions; (2) Ozone and other Trace Gases; (3) Effects of Atmospheric Aerosol and Atmospheric Modelling. Five keynote papers were also delivered at the workshop. Among the keynote speakers were Emeritus Prof. Dr. Lord Julian Hunt on The Changing Asian Atmospheric Environment, Prof. Dato' Dr. Azizan Abu Samah on the Dynamic Drivers of the South China Sea and Its Variability, Prof. Dr. Peter Brimblecombe on Climate Change and Biomass Haze, Prof. Dr. Johnny Chan on Effects of Urbanisation on Local and Regional Climate, and Prof. Dr. John Pyle on Chemistry-Climate Feedbacks in the Tropics: Atmospheric Chemistry Implications of Emissions from the Land and the Ocean. The Workshop concluded with a panel discussion in which all keynote speakers participated. Prof. Dr. Mohd Talib Latif, Chairman of the WACCCA 2014 and Prof. Dr. Phang Siew Moi of University of Malaya, jointly chaired the discussion and closed the session.

Geological Hazards Programme

The 50th CCOP Annual Session

20-24 October 2014, Papua New Guinea

by Lim Choun Sian, Senior Research Officer

The 50th CCOP Annual Session & 63rd CCOP Steering Committee Meeting. *Photo courtesy by CCOP Website.*

The 50th Annual Session of the Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP) was held at the Gazelle International Hotel in Kokopo, East New Britain Province, Papua New Guinea (PNG) from 20-24 October 2014. It was organized and supported by PNG's Department of Mineral Policy & Geohazards Management, Mineral Resources Authority, Department of Petroleum & Energy and East New Britain Provincial Government together with the CCOP Technical Secretariat (CCOP TS). The welcome addresses were delivered by Mr Shadrach Himata, the Permanent Representative of Papua New Guinea to CCOP, and Secretary, Department of Mineral Policy and Geohazards Management, PNG, and the Hon. Simon Painap, Deputy Governor of East New Britain Province, PNG. The opening address was delivered by the Hon. Byron Chan, MP, and the Minister for Mining and Member of Parliament for Namatanai, PNG.

The CCOP Annual Session provides a forum for presentation and discussion of CCOP programmes and activities and for fostering regional cooperation for development among member and cooperating countries, and cooperating organizations. It is an important occasion to review progress and to formulate future plans of CCOP, and provides an opportunity for mutual exchange of information and experience among the participating countries and organizations on their current programmes as well as for considering initiatives proposed for future cooperative activities. In addition, the Thematic Session on the theme of "Geo-Resources: Potential, Development and Management" brought together geoscientists and other stakeholders to exchange knowledge and share experiences on this theme. The Annual Session was attended by 146 delegates coming from the member countries: Cambodia, China, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Papua New Guinea, the Philippines, Thailand and Vietnam. Myanmar and Mongolia attended as observer countries.

Denmark, Finland, Germany, the Netherlands and Norway were some of the cooperating countries in attendance. PETRAD and SEADPRI-Universiti Kebangsaan Malaysia (UKM) were two of the cooperating organizations that attended the Session. The South Pacific Islands Applied Geoscience Commission (SOPAC) attended as an observer organization. Also present at the Session were the Honorary Advisers of CCOP. The member countries, cooperating countries and cooperating organizations represented at the Session each made presentations on their respective country's and organization's report. The CCOP Workplan for 2015 was also presented by the CCOPTS Director. The Advisory Group met separately for discussion, and then presented their recommendations for CCOP at the Session. The Cooperating Organization report from UKM was presented by Mr. Lim Choun Sian, Senior Research Officer with SEADPRI-UKM.

CCOP has a very close relationship with SEADPRI-Universiti Kebangsaan Malaysia. This relationship developed over the many years of close cooperation that CCOP has had with researchers from SEADPRI, LESTARI as well as the Department of Geology in UKM. A memorandum of understanding for cooperation between CCOP and UKM has been in effect since 19 July 2007. On 21 May 2012, SEADPRI-UKM was formally informed that the 58th CCOP Steering Committee meeting in Nanjing, China had accepted UKM as a new CCOP cooperating organization in recognition of its long record of collaboration and shared experiences in CCOP activities. Many activities have been jointly undertaken between UKM and CCOP over the past decade under the auspices of the Minerals and Geoscience Department of Malaysia. The activities were organized in recognition of the importance of regional cooperation and to build the capacity of geoscientists in addressing issues related to sustainable development.

Technological Hazards Programme

The Biosensor – An Early Warning Tool for Mitigation of Hazards

by Dr. Tan Ling Ling, Coordinator of Technological Hazards Programme

Recent Flood at Kuantan Pahang in 2013.
Photo by Google Images

Research in the technological hazards programme is focused on the pure and applied sciences in the context of technological hazards encompassing biohazards, chemical hazards, health hazards and food hazards, as well as their risk management and policy aspects.

The recent massive floods that devastated the northern and eastern states of Malaysia alerted concerned researchers to the need for charting a flood mitigation and natural disaster management plan focusing on adequate warning, preparedness for disaster, rescue and recovery, adaptation, and mitigation. Our on-going research on the development of DNA biosensors for specific and rapid detection of biohazards in flood disaster zones will enhance government effort during such crises. Biosensors could save lives by detecting possible disease outbreaks and infectious agents, thus mitigating the impact of biohazards to humans. We are currently in the midst of setting up the Technological Hazards Laboratory to foster a conducive research environment for researchers and particularly postgraduate students to embark on more innovative research for sustainable development.

Exploration in synthetic biology has been gaining momentum in the field of protein engineering. Genetic modification of protein, for example, of an enzyme biomolecule by various mutation strategies including residue replacement, deletion, insertion and combination of mutations, is capable of manipulating the enzyme in order to achieve higher affinity towards its specific analyte. Incorporating the mutated form of the enzyme into the transducer element may result in desired enhanced biosensing properties, such as improvements in the sensitivity, selectivity and stability of the mutant enzyme-based biosensor.

A collaborative research with the University of Cambridge in synthetic biology for developing novel sensing devices in halocarbon pollutants monitoring in the atmosphere has been established, and supported with a research grant by the Universiti Kebangsaan Malaysia (UKM). Prof. Dr. Elizabeth A. H. Hall from the Institute of Biotechnology, Department of Chemical Engineering and Biotechnology, University of Cambridge, has been invited to give a talk on synthetic biology and biosensor devices, and she will also provide guidance to those writing in the field of biosensors and chemical sensors on publishing in high impact journals. Researchers on attachment to the University of Cambridge will be expected to carry out research in the field of synthetic biology and bioanalytical science to generate new knowledge via synthetic biology concepts for environment monitoring and risk evaluation.

Activities

Summary of Research Projects Awarded in 2014

LIST OF RESEARCH PROJECTS IN 2014 *

No.	Project Name	Expiry Date	Funder
1.	Disasters and Climate Extremes	31-03-2015	DPP, UKM
2.	Strengthening Capacity for Policy Research on Mainstreaming Adaptation	30-06-2014	Asia-Pacific Network for Global Change Research (APN)
3.	Adaptation Roadmap for Malaysia	31-06-2015	UNITEN/NRE
4.	Assessment of Climatic Hazards for Adaptation Response at the Local Level in Peninsular Malaysia	31-05-2015	ERGS - KPT
5.	Assessing Community Risk Insurance Initiatives for Disaster Risk Reduction [Phase 1]	30-06-2016	Insitute for Global Environmental Strategies (IGES), Japan
6.	Establishment of the Asian Network on Climate Science and Technology (ANCST)	31-07-2017	Cambridge Malaysian Education and Development Trust and Malaysian Commonwealth Studies Centre (CMEDT/MCSC), University of Cambridge, UK
7.	Integrating CCA,DRR and L+D to Address Emerging Challenges Due to Slow Onset Processes [Phase 1]	31-07-2015	Asia-Pacific Network for Global Change Research (APN)
8.	Enhancing Capacity on Climate Change Adaptation for Disaster Prevention in Southeast Asia [Phase 1]	30-07-2015	ASEAN-India Green Fund
9.	Ecological Integrity Approach for Regional Sustainable Management of Natural Resources	30-11-2015	Lonjakan Penerbitan, UKM
10.	Developing a Multi-criteria Decision Support System for Urban Disaster Management	31-07-2016	GUP, UKM
11.	Promoting Community Involvement in Disaster Management System	09-05-2015	GGUK, UKM
12.	Politics, Governance, Experiences and Responses to Flooding from the Locals' and Migrants': Perspectives in ASEAN	31-12-2014	Rockefeller Foundation, USA
13.	Development of Optical Microsensor for Edible Bird's Nest Based on Chemically and Biochemically Functionalized Acrylic Microspheres and Microthin Membrane	31-07-2016	GGPM, UKM
14.	An Investigation on the Immobilization and Response of the Nitrite Reductase Enzyme Extracted from Edible Bird's Nest towards Nitrite Hazards	30-11-2017	FRGS - KPT

**** On-going research projects and registered until 31 December 2014***