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IRDR ICoE
Integrated Research on Disaster Risk
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DECEMBER 2020

MALAYSIA LANCAR DAFTAR RISIKO NEGARA
MALAYSIA LAUNCHES A NATIONAL RISK REGISTER

Navakanesh M. Batmanathan

Pada tahun 2019, NADMA telah memulakan satu projek untuk menghasilkan Daftar Risiko Kebangsaan pada tahun 2019 dengan penglibatan beberapa ahli penyelidik utama SEADPRI-UKM. Kajian julung kali ini telah menumpukan kepada penyebaran bahaya tabii di dalam konteks kejadian lepas dan yang berpotensi akan terjadi di negara ini. Ia dilakukan dengan sokongan pelbagai agensi di dalam negara ini. Projek ini telah menghasilkan satu Laporan Penilaian Risiko Kebangsaan (NRA) yang diklasifikasikan sebagai dokumen antara agensi, Repositori Bencana Kebangsaan dan sistem pelaporan kejadian yang dikendalikan oleh NADMA, dan Daftar Risiko Kebangsaan (NRR), yang merupakan dokumen penerbitan untuk hebahan orang awam.

Kajian ini juga telah menghasilkan satu sistem DesInventar bagi menyokong pelaporan kemajuan negara di dalam pelaporan Rangka Kerja Sendai (SFDRR) dan Sasaran Pembangunan Mampan (SDGs). Satu pelan rancangan sedang diteliti untuk platform DesInventar secara dalam talian yang dapat diakses oleh agensi-agensi di peringkat agensi negeri, bersama dengan Platform Kebangsaan mengenai DRR (myDRR). Melalui inisiatif ini, ia berupaya untuk memacu strategi pengurangan risiko bencana di peringkat tempatan dan seterusnya mencapai Sasaran E Rangka Kerja Sendai.

Daftar Risiko Kebangsaan menerangkan jenis-jenis bahaya dan kedudukan peringkatnya di dalam negara ini serta memberikan panduan untuk meningkatkan daya tahan bencana melalui elemen kesiapsiagaan. Ia juga turut mendokumentasikan bahaya tabii

The National Disaster Management Agency (NADMA) Malaysia initiated a project to establish a National Risk Register in 2019 with the involvement of key researchers from SEADPRI-UKM. The inaugural study focused on collating natural hazards in the context of historical and potential occurrences in the country. It was conducted with the support of multiple agencies in the country. The project resulted in the National Risk Assessment (NRA) Report that is a classified inter-agency document; the National Disaster Repository, an event reporting system managed by NADMA; and the National Risk Register, which is a publication intended for the public.

The study also delivered the DesInventar system to support the country's reporting of progress to the Sendai Framework and Sustainable Development Goals (SDGs). Planning is underway for a DesInventar online platform accessible to state agencies, in conjunction with the National Platform on DRR (myDRR). These are pathways for advancing local disaster risk reduction strategies and achieving Target E of the Sendai Framework.

The National Risk Register describes the types of hazards and their ranking in the country and imparts guidance for increasing disaster resilience through preparedness. It documents key natural hazards that may impact different areas in Malaysia and also provides an overview of these events.

The National Risk Register was unveiled during the 2020 Asia Pacific Science and Technology Conference on DRR, which was held virtually on 15 October 2020.

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Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM)

Buletin SEADPRI

Buletin SEADPRI is published biannually by Universiti Kebangsaan Malaysia's Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM) through Penerbit LESTARI. It contains short communications, case studies and original research on science, technology, innovation, impact, vulnerability and governance related to disaster risk reduction.

About SEADPRI-UKM

Universiti Kebangsaan Malaysia's Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM) has been in operation since June 2008. Based at the Institute for Environment and Development (LESTARI), the Centre addresses crucial challenges on disaster risk reduction in Malaysia and the region. The research focus is on climatic hazards, geological hazards and technological hazards, with emphasis on capacity building, mainly through post-graduate programmes and specialized training. Transdisciplinary research conducted by the Centre is action-oriented, bridges the science-governance interface and provides pathways for disaster prevention.

In 2016, SEADPRI-UKM was acknowledged by the Integrated Research on Disaster Risk Programme (IRDR), jointly sponsored by International Science Council (ISC) and the United Nations Office for Disaster Risk Reduction (UNDRR), as an IRDR International Centre of Excellence (ICoE) for Disaster Risk and Climate Extremes (ICoE-SEADPRI-UKM). Globally, SEADPRI-UKM now sits with a group of 16 institutions with such recognition, representing various regions. The focus of ICoE-SEADPRI-UKM is to strengthen local input for addressing regional disaster risks in conjunction with national and international partners. A major flagship is the Asian Network on Climate Science and Technology (ANCST), coordinated by SEADPRI-UKM and funded by the Cambridge Malaysian Education and Development Trust, to link disaster risk reduction and climate change for building resilience in the region.

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Daripada muka surat 1
From page 1

utama yang boleh memberi kesan kepada kawasan yang berbeza di Malaysia dan juga memberikan gambaran keseluruhan kejadian-kejadian ini. Daftar Risiko Kebangsaan secara rasminya dilancarkan semasa Persidangan 2020 Asia Pacific Science and Technology Conference on DRR, yang telah diadakan secara atas talian pada 15 Oktober 2020 yang lalu. Ia dianjurkan dengan kerjasama United Nations Office for Disaster Risk Reduction (UNDRR), Asia-Pacific Science Technology and Academia Advisory Group (AP-STAAG), Akademi Sains Malaysia (ASM), Pusat Kajian Bencana Asia Tenggara Universiti Kebangsaan Malaysia (SEADPRI-UKM) dan beberapa rakan penganjur yang lain.

The event was co-organized by the United Nations Office for Disaster Risk Reduction (UNDRR), Asia-Pacific Science Technology and Academia Advisory Group (AP-STAAG), the Academy of Sciences Malaysia (ASM), Universiti Kebangsaan Malaysia's Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM) and other partners.

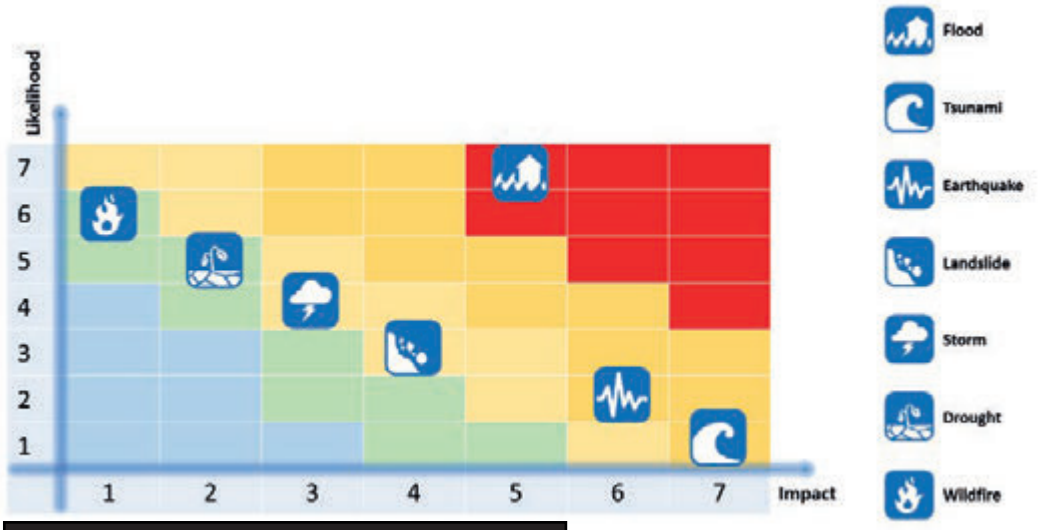

Photo by National Disaster Management Agency (NADMA)

There are seven types of hazards in Malaysia that can be ranked based on their impact and likelihood.

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Research Highlight

Seasonal Forecasting and Monitoring of Peat Forest Fires in Indonesia

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Abstract: According to Indonesia's national disaster agency, Central, West and South Kalimantan; Riau, Jambi; and East and South Sumatra are most affected by peat fires. This paper briefly highlights methods for predicting and monitoring peat fires in Kalimantan and Sumatra Island. The peat forest fire hazards range vulnerability system using the Forest Fire Danger Rating System is one of the recommended methods that can provide information on the risk index of forest fires based on daily weather input data or Fire Weather Index. This information is very useful for mapping the vulnerability of areas in Kalimantan and Sumatra Island to peat forest fires.
Keywords: *Peat fires, Kalimantan, Sumatra island, Forest Fire Danger Rating System*

Introduction

Frequent and large-scale peat fires occur both in Indonesia and in neighboring countries, particularly in Kalimantan and Sumatra (Field and Shen 2008; Field et al. 2009; Schultz et al. 2008). It has considerable impact on carbon emissions, haze production, biodiversity, health, and economic activities (Spessa et al. 2014). These fires are caused by various factors, such as increased human activity and extreme climate events. They are nearly always associated with the El Niño and IOD events. Past studies estimate that the destructive peat fires in South Kalimantan and East Sumatra, during the exceptionally strong El Niño in 1997/1998 and 2015, rank as some of the largest peat emissions events in recorded history. More studies are needed, however, to develop methods of both predicting and monitoring peat fires. Recent advances in seasonal climate forecasting based on the use of state-of-the-art dynamical models that couple atmosphere, ocean and land processes, and assimilate a vast range of climate-related earth observation measurements opens up the possibility of forming a more physical-based method for predicting peat fires and haze events with several months lead time in Indonesia.

Approach

Several measures have been used by the Indonesian government to deal with this issue. Firstly, putting a stop to forest clearance. Stopping forest destruction is one of the easiest and most cost-effective ways to prevent catastrophic climate change. The Indonesian president has also vowed to protect peatlands; he showed his solidarity by supporting the damming of a canal to stop the drainage of a peat forest in Kalimantan and Sumatra Island. Since then, the area has hardly been affected by this season's fires. Re-flooding and implementing other water management measures in critical peatland areas can sharply reduce fire risks. These methods have also effectively reduced peat forest fires in Indonesia. However, an early warning system to prevent peat forest fires is needed. To date, the huge impact of peat forest fires which release carbon emission into the atmosphere and extreme climate events could not be avoided. Therefore, the purpose of this study is to develop an early warning system, and a peat forest fires forecasting and predicting method in Sumatra island by analyses of the peat forest fires hazards range vulnerability system using Forest Fire Danger Rating System (FDRS).

Highlights

Forest Fire Danger Rating System (FDRS) is one of the methods that can provide information on the risk index of forest fires based on daily weather input data, also known as the Fire Weather Index (FWI). Fire vulnerability is a common indicator of all factors that affect flammability, fire spread, physical impacts of fire and the difficulty of fire control. This index uses four climate variables: humidity, ambient temperature, rainfall and mean wind speed. The components in the humidity index are fine fuel moisture code, duff-moisture code and drought code. The last index is the fire behavior index which includes the initial spread index and build up index. The prediction system of peat forest fire vulnerability needs at least a month's worth of weather input data from the FDRS. Therefore, this system needs numerical weather prediction (NWP). The output of the NWP is potential data to predict weather variability. For the areas unmeasured by weather stations, modelling data could be used to provide large spatial information and homogenous information. Weather Research and Forecasting Environmental Model System (WRF-EMS) is a well known numerical weather prediction model. In addition, there are several methods to predict peat forest fire vulnerability. These are normalized difference vegetation index (NDI), drought that includes land surface temperature, Keetch Byram Drought Index (KBDI), Normalized Difference Water Index (NDWI), and Standarized Precipitation Index (SPI); it includes Normalized Burn Ratio (NBR) and ground water level (GWL).

Conclusion

Hardcopy and digital maps are developed, which provide information on vulnerable peat forest fire areas in Sumatra. The first step was an analysis of ground water level. This was done by building sensors in the peat forest area, using satellite data and ground checking as well as using the Weather Research and Forecasting Environmental Model System (WRF). The data is used in the FDRS to show temporal and spatial information on the vulnerability of an area to peat forest fire. The output from the project include a web GIS and application that could be used in an Android system.

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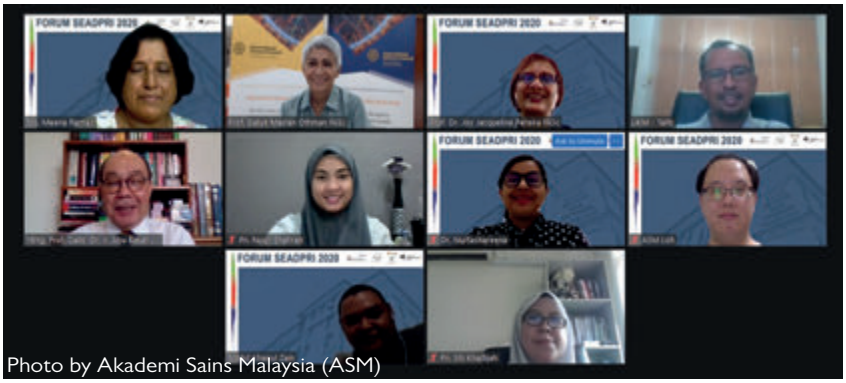
Climatic Hazards Programme

Understanding the International Financial Landscape for Climate Change Adaptation

Tariqur Rahman Bhuyan & Nurul Syazwani Yahaya
SEADPRI-Universiti Kebangsaan Malaysia



The SEADPRI Forum 2020 was attended by 100 participants in the Zoom meeting

The SEADPRI Forum 2020 was successfully held on 19 November 2020, jointly convened by SEADPRI-UKM and Academy of Sciences Malaysia (ASM) through a webinar session via Zoom. The guest speaker was Ms. Meena Raman, legal adviser and Coordinator of the Climate Change Programme at Third World Network (TWN), who spoke on the International Financial Landscape for Climate Change Adaptation. The Forum was moderated by Prof. Emerita Datuk Dr. Mazlan Othman FASc. Senior Fellow of ASM, and Prof. Dr. Joy Jacqueline Pereira FASc. Principal Fellow of SEADPRI-UKM. The guest of honor, YBhg. Prof. Dato' Dr. Ir. Abu Bakar Jaafar FASc. Vice President, ASM, in his officiating remarks emphasized that steps must be taken to overcome the impact of climate change; he also talked about the role and contribution of ASM to climate change initiatives in Malaysia.

Ms. Meena Raman provided a broad overview of the global climate change negotiations and its associated financial arrangements. In the international landscape, climate-related funds are available based on the obligations under the international treaties such as the United Nations Framework Convention on Climate Change (UNFCCC), Kyoto Protocol and Paris Agreement. The objective of the Climate Change Convention is to stabilize greenhouse gases (GHGs), allowing ecosystems to adapt naturally. It also requires governments to formulate, implement, publish and regularly update national programs on climate change mitigation, and measures to facilitate adequate adaptation to climate change. One of the most important provisions of the UNFCCC and its Paris Agreement is that developed countries have an obligation to provide financial resources to developing countries that are vulnerable to climate change adversities in meeting their cost of adaptation. She pointed out that previously mitigation got more attention and focus, whereas over the years, it has been emphasized by various decisions under the UNFCCC that adaptation should get equal importance.

Under the Paris Agreement that took effect in 2016, governments are required to submit 'Nationally Determined Contributions' (NDCs) as a global response to climate change. This covers mitigation as well as adaptation. The Agreement also set adaptation global goals that include the enhancing of adaptive capacity of countries, strengthening their resilience and reducing their vulnerability to climate change. This brings parity between adaptation and mitigation, with the latter dealing with the goal of limiting temperature rise (by keeping the rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C). Ms. Meena Raman suggested that Malaysia needs to expedite its current efforts at having a National Adaptation Plan to reduce vulnerability impacts by building capacity and resilience, and facilitate the integration of climate change adaptation in a coherent manner.

In 2010, the Green Climate Fund (GCF) was established under the UNFCCC as a financial mechanism to support developing countries in adaptation and mitigation efforts to counter and address climate change, and became effective in 2011. Currently the available financial mechanism under the various treaties are (i) the Adaptation Fund (AF) (ii) the Green Climate Fund (iii) the Global Environment Facility and (iv) the Special Climate Change Fund. She emphasized that Malaysia is entitled to receive funds from the AF as well as the other funds because according to Article 4.8 of the UNFCCC, the characteristics for what are vulnerable conditions include (a) countries with low-lying coastal areas; (b) countries with semi-arid areas, forest areas and areas liable to forest decay; (c) countries prone to natural disasters; (d) countries with areas liable to drought and desertification; (e) countries with areas that have a fragile ecosystem. In order to apply for funding, any proposal will need to identify an adaptation or resilience challenge that could be addressed with support. The Special Climate Change Fund (SCCF) is operated by the Global Environment Facility. It is open to all vulnerable developing countries, and for the SCCF, adaptation is a top priority, which includes aspects related to water resource management, land management, agriculture, health, infrastructure and a fragile ecosystem.

The Green Climate Fund is the most recent fund and its aim is to promote a paradigm shift in efforts towards low emission and climate-resilient development. Access to resources of these funds can be done through entities accredited to the respective funds and with the approval of the National Designated Authority (NDA) or in-country focal point. For Malaysia, the NDA for the various funds is the Ministry of Environment and Water (KASA). However, projects and programmes need to meet the policy criteria of these funds, such as environmental and social safeguards, gender policy, policy on indigenous people, etc. Developing a good proposal is key to getting funding. There is money available for good, transformational action-oriented projects and programmes with sound ideas and goals.

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More interesting insights emerged from the discussion session. One was that the proposal development can also be funded, and all it needs is for one to take the initiative. In addition, integrating academia into proposal development will enhance the proposal quality. It was also realized that while many may think funds are only provided on a loan basis, the reality is that adaptation-related financing is mainly in the form of grants. The Green Climate Fund includes a private sector facility for micro-small and medium as well as large enterprises, which also have to go through an accredited entity as well.

The country should make a serious effort to get its relevant and eligible agencies to become accredited entities in order to gain access to climate funding from these available mechanisms. In the absence of a national accredited entity, Malaysia can resort to relying on international accredited entities in the meantime.

The country is very fortunate to be able to draw on the experience and vast knowledge of Ms. Meena Raman, to gain insights on global climate negotiations and the international financial landscape for adaptation.

The UNDRR Asia Pacific Science Technology and Academia Advisory Group (AP-STAAG) Key Publication for 2020

The Status of S&T in Disaster Risk Reduction in Asia Pacific ***(above)*** *and the Asia Pacific Framework for NATECH (natural-hazard-triggered technological event) Disaster Risk Management* ***(below)****, two key products of the Asia Pacific Science Technology and Academia Advisory Group (AP-STAAG) in 2020, were launched by UNDRR during the 2020APSTCDRR recently.*

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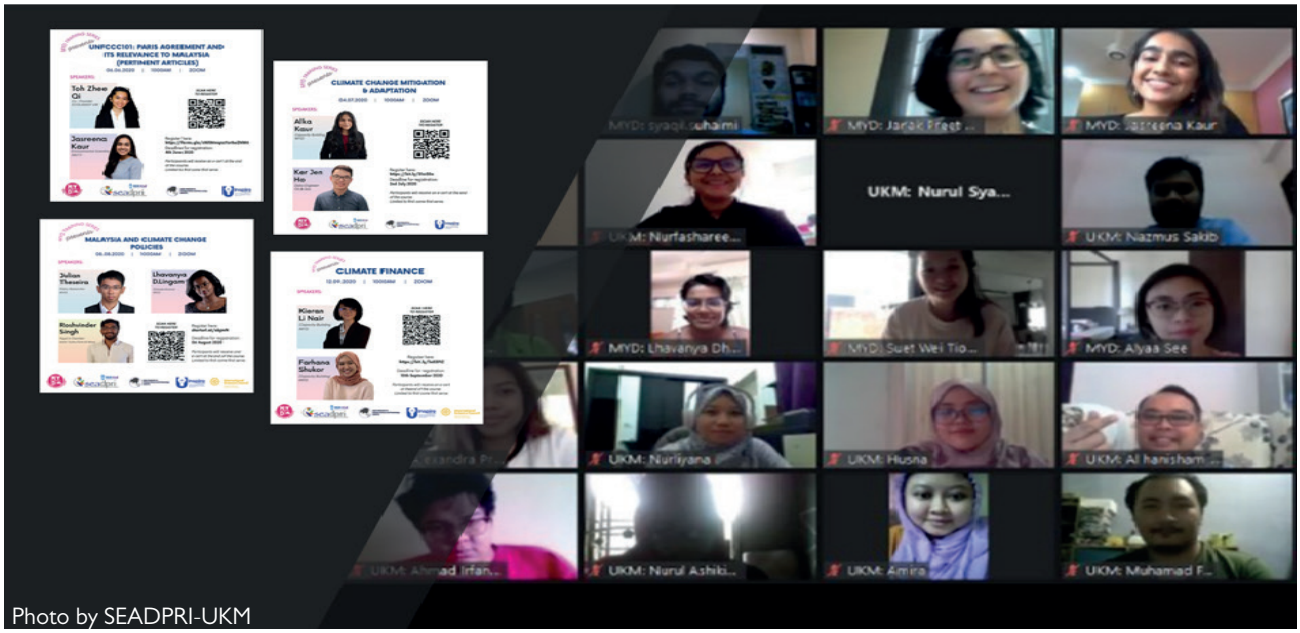
Climatic Hazards Programme

Climate Change Training for the Youth and Young Professionals

Nurfashareena Muhamad and Mohd Khairul Zain Ismail
SEADPRI-Universiti Kebangsaan Malaysia



The training series was conducted virtually featuring young speakers of calibre

The COVID-19 global situation has not been a hindrance to our efforts in enhancing the capacity of the Youth and Young Professionals (YYPs) in Climate Change and Disaster Risk Reduction. Led by SEADPRI-UKM, U-INSPIRE Malaysia@UKM, ANCST, the Malaysian Youth Delegation with support from other partners, conducted a series of virtual training on climate change for the YYPs in Malaysia and the region. The purpose of the training was to equip the YYPs with crucial knowledge pertaining to the issues of climate change, sustainability, and the environment. The training was conducted virtually every month on the Zoom platform from May 2020 to September 2020. The average number of participants who attended each training session was about 55-65 people, who came from various backgrounds and with an interest in climate change. The training featured several speakers from the Malaysian Youth Delegation who have been exposed to and have had training regarding the respective topics at hand. Critical topics and issues that are relevant to the broader climate change discourse were explored monthly, especially those that concern the local arena.

The first session focused on the Paris Agreement and its general implications on Malaysia. Articles pertaining to Nationally Determined Contributions, Carbon Market, Capacity Building, and Climate Technology were further elaborated to allow participants an insight into Malaysia's progress in these specific areas. The second training series was on the mitigation and adaptation of climate change in Malaysia using a system-thinking approach. The session discussed the implementation of climate change mitigation and adaptation, the current situation in Malaysia and the contribution of YYPs to this effort.

The third training was rather challenging with the topic on climate change policies; with a brief introduction on the global scene and the trickle down into climate change policies in Malaysia. Participants were given insights into Malaysia's current climate policies and institutional set-ups along with their limitations. This session also touched on basic legal concepts which are vital in equipping the public with the ability to make informed decisions and statements that can help influence Malaysian climate change policies better. The final session introduced the participants to the concept of climate finance at various levels. The session wrapped up with a critical message on the challenges that need to be overcome to ensure the successful implementation of climate finance, and discussed the involvement of YYPs for a better future.

This virtual training is a genuine initiative reflecting enthusiasm and commitment of young people of calibre to promote continued and equal advancement of science to ensure that the YYPs in Asia and the Pacific become more engaged in science-policy interfacing and provide better scientific coverage for the region.

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Climatic Hazards Programme

Youth Social Entrepreneurship for Building Community Resilience

Nurul Syazwani Yahaya and Nurfashareena Muhamad
SEADPRI-Universiti Kebangsaan Malaysia

Launched during the workshop by Academician Dr. Mazlan Othman, The Register is a living document that features DRR social entrepreneurs in Malaysia and other regions. It will be instrumental in mobilizing DRR social entrepreneurship in the region by promoting partnerships and creating appropriate conditions for scaling up.

The Register will be included in the Handbook for DRR social entrepreneurs being developed by the IDRC project. The two-day webinar has spotlighted the valuable contributions by youth social entrepreneurship in solving problems of the Tropics, by advancing science, engineering, technology, and innovation. It should also serve as an inspiration as well as a rallying call to encourage youth to start their enterprises and contribute back to the community in building community resilience to disasters and climate change.

A regional workshop titled "Youth Social Entrepreneurship for Building Community Resilience to Disasters and Climate Change in the Tropics" was held on 13 August 2020. It was conducted under the IDRC Canada funded project on "Promotion of Social Entrepreneurship in Disaster Risk Reduction to Build Community Resilience" implemented by SEADPRI UKM and other partners, under the leadership of Prof. Joy Jacqueline Pereira. The workshop was jointly supported by the Mahathir Science Award Foundation and the Academy of Sciences Malaysia (ASM). It was held in conjunction with the ASM's Youth for the Tropics event on 12 to 13 August 2020, in celebration of the International Youth Day.

Ten speakers from the region participated in three sessions: Social Enterprise Enablers, Real-World Case Studies and Panel Session on Success Factors and Barriers to Social Entrepreneurship. The workshop served as a platform for young social entrepreneurs to understand the funders' requirements, share experience and knowledge in building community resilience to disasters and climate change, and be spotlighted in the Register of Disaster Risk Reduction Social Entrepreneurs.

Photo by Akademi Sains Malaysia (ASM)

Academician Dr. Mazlan Othman, Fellow of the Academy of Science Malaysia (FASc) and director of the International Science Council, The Regional Office for Asia and the Pacific (ISC ROAP)

Photo by SEADPRI-UKM

The panel session moderated by Prof. Joy Pereira involved several speakers from different sessions. The discussions provided valuable input in building a roadmap for DRR social entrepreneurship in the Asia Pacific and other regions

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Geological Hazards Programme

Malaysian Youth Perspectives on Earthquakes and Landslides in Malaysia

Mohd Khairul Zain Ismail and Nurfashareena Muhamad
SEADPRI-Universiti Kebangsaan Malaysia

The jointly organized inaugural U-INSPIRE Coffee Table Talk Series No. 1 was attended by 60 participants, not only from Malaysia, but also from Asia and the Pacific

The inaugural session of the U-INSPIRE Coffee Table Talk Series was successfully conducted on 24 October 2020. The webinar was co-hosted by the U-INSPIRE Malaysia and Young Earth Scientist (YES) Malaysia with support from the International Science Council Regional Office for Asia and the Pacific (ISC ROAP), Mineral and Geoscience Department of Malaysia (JMG), Universiti Kebangsaan Malaysia's Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM), and Asian Network on Climate Science and Technology (ANCST). This session featured two young geologists: Mr. Navakanesh Batmanathan, a research analyst and one of the National Geographic Young Explorers, and Mr. Mohd Farid Abd Kadir, a geologist from the JMG Perak. Both of them are registered members of U-INSPIRE Malaysia.

The webinar started with Mr. Navakanesh giving a basic explanation of the global seismicity and the tectonic map of Southeast Asia, which consists of the Sunda Plate, the Philippine Sea Plate and also the Australian Plate. The Sabah earthquakes on June 2015 and March 2018 were central to the discussion. The recent study done by Mr. Navakanesh on the Sabah earthquakes was also presented, especially on the recent compilation of the active faults in Sabah; the faults behaved very differently on the surface and the sub-surface and could lead to the future seismicity study in the future.

He also brought up the importance of earthquake preparedness and response, especially in Sabah, so that the self-resilience will be improved in the future. The second speaker, Mr. Mohd Farid, focused on the Cameron Highlands landslide. Cameron Highlands is the largest hilltop resort in Malaysia and a tourist hotspot. Agriculture and services are major economic providers to the surrounding communities.

However, geological material, morphology, anthropogenic factors, as well as rain intensity as a triggering factor, and improper management of land has led to severe erosion and landslide events since 1961. The prevention and mitigation initiatives carried out by JMG were shared. He pointed out that the continuous efforts by relevant agencies are needed to ensure all stakeholders and communities are always prepared and aware of the landslide threat in their vicinity.

"The Coffee Table Talk Series is a flagship event organized by U-INSPIRE Malaysia that will provide an opportunity for the Malaysian youth and young professionals (YYPs) to highlight their achievements in their respective fields of work. The platform provided will not be limited to science communication only but is also open to the arts, language, and such fields."

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Technological Hazards Programme

LESTARI Postgraduate Colloquium 2020

Tan Ling Ling and Noor Shafirah Ramli
SEADPRI-Universiti Kebangsaan Malaysia

The LESTARI Postgraduate Colloquium 2020 (KSL2020) was held virtually on 13-14 October 2020 via Microsoft Team platform. A total of 14 postgraduate students successfully presented their research progress; thirteen of them were doctorate candidates. Four doctorate candidates were from SEADPRI, of whom two are from the Technological Hazards Program.

Ms Siti Nur Syazni Mohd Zuki, who presented her study on the "Whole-Cell Microbial Biosensor based on Nitrite-degrading Microorganism for Evaluation of Meat-based Food", is supervised by Assoc. Prof. Dr. Tan Ling Ling. Nitrite ions are widely used in the food industry especially in the production of cured meat products such as bacon, sausage and ham. Besides, it is also extensively applied as a preservative in fishery products in most countries. Excessive nitrate ions ingested by humans, especially pregnant mothers, can cause stomach and intestine disorders and increase the risk of cancer; but the major cause is methemoglobinemia. Traditional analytical methods rely on the use of instruments such as gas chromatography-mass spectrophotometer (GC-MS), high-performance liquid chromatography (HPLC) and ion chromatography (IC), which cannot give a real-time response, is expensive, time-consuming, subject to interferences and not likely for on-site detection purposes. Therefore, there is a significant need for devices that are capable of measuring nitrite concentration in-situ, rapidly and without reagents, sample pre-treatment or extraction steps.

Ms. Ong Jing Yi is a Masters candidate, who presented on the "Development of Impedimetric Aptasensor based on Polyaniline for Aflatoxin B1 Detection in Chicken Feed for Food Safety". Ms. Ong is also supervised by Assoc. Prof. Dr. Tan Ling Ling. The presence of mycotoxin in foodstuffs and animal feeds is common nowadays as mycotoxin is a natural product mainly produced by fungi as the secondary metabolites. High levels of aflatoxin (AF) in the human body may lead to hepatobiliary carcinoma, aflatoxicosis and other conditions. Therefore, an action level for aflatoxin in food has been introduced by the Food and Drug Administration (FDA) which is in the range of 0.5−20.0 μg kg-1 to prevent foodborne pollution of AF. Therefore, the study aims to optimize the usage of the electrochemical AFB1 aptasensor based on polyaniline (PAni) bio-conducting matrix, in detecting the AF present in foodstuffs and animal feeds.

Mr. Mohd Khairul Zain presented his progress on the "Development of the Indicators on the Sendai Framework 2015-2030 (SFDRR) Implementation". The study is supervised by Prof. Dr. Joy Jacqueline Pereira. The study aims to develop a framework for disaster data inventory in Malaysia to meet the SFDRR requirements at the national and global levels. It outlined the importance of the aggregated data collected in implementing the SFDRR in the country to meet the United Nations requirements. Disaster data gaps collected from the ministries and agencies are the main problems that need to be addressed. While the secondary data from the open source has to be collected for Malaysia as an option, the current disaster data collected are in a disaggregated form and kept within the ministries and agencies with no common platform for sharing.

The other doctorate candidate from SEADPRI-UKM is Ms. Maria Zura Mohd Zain, who presented her findings on "Industrialised Building System (IBS) Adoption Strategies to Facilitate Affordable Housing Development", also supervised by Prof. Dr. Joy Jacqueline Pereira. This study aims to identify factors affecting demand and supply for the provision of affordable housing from Malaysian government intervention in providing houses for the people. Ms Maria, who works at the Construction Industry Development Board (CIDB) Malaysia has outlined the importance of affordable housing, which requires a new concept that synergistically addresses critical issues encompassing mismatch in demand and supply. As a unique building technology, IBS is not implemented effectively in Malaysia even though many initiatives and incentives are given by the government.

The two-day KSL2020 which was attended by 75 staff and students, witnessed the accolades presented by the Secretariat, based on the criteria judged. For SEADPRI-UKM, Mr. Khairul has won the "Best Category of Discourse" while Ms. Siti Nur Syazni has won the "Best Extended Abstract". Ms. Ong Jing Yi was presented with two awards which are the "Best Presentation and Communication", and the "Overall Winner of KSL2020". Congratulations on these achievements!

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Technological Hazards Programme

Lawatan Kerjasama Penyelidikan oleh Akademik Newcastle University di SEADPRI

Tan Ling Ling and Mohd Faizol Markom
SEADPRI-Universiti Kebangsaan Malaysia

Lawatan kerjasama penyelidikan oleh Dr. Andrew Pike dari Newcastle University pada 24 June 2019 di Pusat Kajian Bencana Asia Tenggara (SEADPRI), Universiti Kebangsaan Malaysia, Bangi, Selangor

Program Bencana Teknologi, Pusat Kajian Bencana Asia Tenggara (SEADPRI-UKM) telah menerima lawatan oleh Dr. Andrew Pike, seorang akademik dari Newcastle University, Newcastle upon Tyne, United Kingdom pada 24 Jun 2019. Dr. Andrew Pike merupakan Pengarah Program Ijazah untuk MSc Kimia dan Pensyarah Kanan dalam Nanosains Kimia serta Tutor Kanan dalam Kimia.

Tujuan Dr. Andrew Pike melawat ke SEADPRI-UKM adalah untuk mengadakan kerjasama penyelidikan dalam pembangunan aptasensor impedimetrik berasaskan polianilina untuk pengesanan aflatoksin B1 dalam makanan ayam ternakan untuk keselamatan makanan yang merupakan salah satu objektif dalam projek penyelidikan Skim Geran Penyelidikan Fundamental (FRGS/1/2019/STG01/UKM/02/4) oleh Jabatan Pendidikan Tinggi, Kementerian Pendidikan Malaysia.

Tumpuan penyelidikan Dr. Andrew Pike khususnya dalam sintesis enzim DNA pereka, bahan bercetak untuk elektronik fleksibel, DNA origami untuk bahan nano yang berfungsi 2D, nulceosida dan nukleotida terubah suai, kimia permukaan silikon untuk aplikasi biosensor, dan sistem berasaskan DNA sebagai penyambung antara *(interconnects)* dan pengesanan secara elektronik adalah bermanfaat dan berkaitan dengan projek penyelidikan dalam fabrikasi sensor/biosensor mikotoksin. Beliau telah dilantik sebagai penyelia bersama kepada pelajar Sarjana Sains iaitu Ong Jing Yi (P98955) di SEADPRI-UKM, Institut Alam Sekitar dan Pembangunan (LESTARI) yang merupakan seorang Pembantu Penyelidik Siswazah dalam kajian penyelidikan ini. Selain itu, lawatan penyelidikan oleh Dr. Andrew Pike juga mencadangkan kerjasama penyelidikan melalui permohonan geran penyelidikan antrabangsa dalam ujian DNA dengan penjejakan sumber mikrob dalam sumber air.

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Kuala Lumpur Consensus on S&T for Disaster Risk Reduction

Joy Jacqueline Pereira and Mohd Khairul Zain Ismail
SEADPRI-Universiti Kebangsaan Malaysia

Photo by SEADPRI-UKM

The main panelists of the Virtual Asia-Pacific Science and Technology Conference for Disaster Risk Reduction (APSTCDRR) held on 15 October 2020. The outcome document can be retrieved at www.ukm.my/apstcdrr

On 15 October 2020, SEADPRI-UKM and the Academy of Sciences Malaysia (ASM) partnered with the Asia Pacific Science Technology and Academia Advisory Group (AP-STAAG), Asian Network on Climate Science and Technology (ANCST) and other partners to convene the virtual 2020 Asia-Pacific Science and Technology Conference for Disaster Risk Reduction, under the aegis of the United Nations Office for Disaster Risk Reduction (UNDRR) and the National Disaster Management Agency (NADMA) Malaysia. The Conference was officiated by the Director General of NADMA Malaysia, Datuk Dr. Aminuddin Hassim, with remarks from senior officials from the UNDRR Regional Office for Asia and the Pacific, ASM and AP-STAAG.

The climax was the Kuala Lumpur Consensus on S&T for Disaster Risk Reduction, which documents the commitment of about 200 researchers, academics and other stakeholders from across the Asia-Pacific who participated in the Conference, to provide evidence-based research to inform the recovery process in the context and aftermath of COVID-19 to ensure long-term resilience. The Kuala Lumpur Consensus was formulated by AP-STAAG with support from the research team at SEADPRI-UKM, involving Prof. Joy Jacqueline Pereira, Dr. Nurfashareena Muhamad and Dr. Sarah Aziz, who conducted the background work and coordinated the national and regional stakeholder consultation. It records four priority actions and an additional four measures to accelerate these actions. These take into account progress in science and technology for disaster risk reduction in the Asia Pacific, and due consideration from the Sendai Framework to "build back better" in this window of opportunity, as the region moves to recover from the COVID-19 pandemic.

The UNDRR will now route the Kuala Lumpur Consensus on S&T for Disaster Risk Reduction to the Asia-Pacific Partnership Forum on DRR in 2020, Asia Pacific Ministerial Conference for Disaster Risk Reduction (APMCDR) in 2021 and Global Platform in 2022. The Kuala Lumpur Consensus will also be formally published on the UNDRR website.

In the meantime, SEADPRI-UKM will continue to dedicate its efforts to support the implementation of the Kuala Lumpur Consensus in Malaysia and the region.

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