Asian Network on
Climate Science and Technology
(ANCST)

Asian Network on Climate Science and Technology Annual Report 2019 (Year 6)

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Annual Report 2019 (Year 6) to Cambridge Malaysian Education and Development Trust (CMEDT) and Malaysian Commonwealth Studies Centre (MCSC)

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ACKNOWLEDGEMENT

Universiti Kebangsaan Malaysia's Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM) would like to acknowledge the support of the Cambridge Malaysian Education and Development Trust (CMEDT) and Malaysian Commonwealth Studies Centre (MCSC) for funding the establishment and operations of the Asian Network on Climate Science and Technology (ANCST). The support of the Advisory Committee on Protection of the Sea (ACOPS), Guy Carpenter Asia-Pacific Climate Impact Centre, City University of Hong Kong, Indian Institute of Science, Bangalore and Indian Institute of Technology, Delhi is also much appreciated. The Asia-Pacific Network for Global Change Research (APN), International Science Council Regional Office for Asia and the Pacific (ISC-ROAP) as well as other national and international partners that co-financed workshops and other activities are also gratefully acknowledged.

Executive Summary

A major achievement of the Cambridge Malaysian Education and Development Trust and Malaysian Commonwealth Studies Centre (CMEDT/MCSC) and Universiti Kebangsaan Malaysia in support of human sustainability is the establishment of the Asian Network on Climate Science and Technology (ANCST) through a Collaborative Agreement signed on 19 November 2013. Led by Professor Lord Julian Hunt of University of Cambridge and Professor Joy Pereira of UKM's Southeast Asia Disaster Prevention Research Initiative (SEADPRI-UKM), the international network is flourishing with considerable impact. ANCST facilitates collaboration and exchange of information between researchers engaged in scientific and technological aspects of climate change and climate driven disasters specific to Asian conditions and phenomena. From its base at SEADPRI-UKM, with support from world-class Commonwealth institutions, ANCST coordinates Special Topic Groups on key climate science and technology topics including monsoon dynamics, land-sea interactions, climate change effects on the urban environment, and climate-driven disaster risk reduction and resilience building.

Overview of Achievements: Since its establishment, ANCST has mobilized prominent Asian experts and assembled over 1600 scientists, policy-makers and private sector practitioners in the region through 43 workshops and associated events, and enhanced their engagement in global processes such as the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). The Malaysia Window to Cambridge at UKM programme has left a legacy of over 80 high-calibre Young Scientists of ANCST. The ANCST Website Portal (http://www.ancst.org/) is an active forum with over 600,000 visitors, containing a record on all events and publications that target science-policy interfacing. The ANCST Bulletin Board sends out periodic short emails alerts on time-sensitive news, to keep scientists continuously engaged, particularly in the IPCC Sixth Assessment Cycle. The ANCST Database currently contains the contact information of over 1600 experts and policy-makers working in the region.

Accomplishments in 2019: The STG on Young Professionals in DRR and Climate Change, powered by talented Young Scientist of ANCST mobilised to link major groups of youths and young professionals in the region so that they are easily found by senior researchers, enabling ANCST to virtually connect these two cohorts in Asia. ANCST convened **eight events** with multiple partners in Kuala Lumpur, New Delhi, Putrajaya and Suva, involving **783 participants from 34 countries;** comprising researchers, policy-makers, private sector practitioners and early career researchers. This marked a landmark year for ANCST, which saw **increased engagement with scientists from the Western Pacific Islands as well as early career researchers in the region**. The high profile of ANCST was **maintained in 2019 with an extended reach to the Pacific and involvement in** high-level IPCC meetings held in Cambodia, Myanmar and Kazakhstan, among others. This **facilitated more support to the IPCC Sixth Assessment Report, Sendai Framework on Disaster Risk Reduction and Paris Agreement.** ANCST is the conduit for outreach in a new project on building female social entrepreneurship for managing disaster and climate risks, with a value of about £280,000 over 3 years, led by Professor Joy Pereira with Professor Julian Hunt as an Advisory Committee Member, providing oversight. A 2019 publication of ANCST on a major workshop held last year, was an annex to the Progress Report on Communication and Outreach Activities, submitted to over 180 Governments by the Secretary of the IPCC at its Forty-Ninth Session in Kyoto, Japan. The ANCST work plan for 2020 is to continue the modus operandi of forging strategic alliances to leverage exponentially on the seed-funding provided by CMEDT/MCSC and conduct initiatives involving researchers, practitioners and decision-makers on key climate change issues. The next phase is to scale-up activities and reinforce the global image of University of Cambridge and UKM as research collaborators in building resilience to climate change and natural disasters through ANCST under the patronage of CMEDT/MCSC.

1.0 Introduction

Climate change is one of the greatest challenges of our time and its adverse impacts undermine the ability of all countries to achieve sustainable development. This is recognised in the three major global agreements of 2015; the Paris Agreement of the UN Framework Convention on Climate Change, Sendai Framework on Disaster Risk Reduction and 2030 Agenda for Sustainable Development. Increases in global temperature, sea level rise, ocean acidification and other climate change impacts are serious threats that have to be addressed. The survival of many societies and of the biological support systems of the planet is at risk. Whilst global level cooperation facilitate means of cooperation, context specific and continuous capacity enhancement, data and knowledge improvement is required to identify practical solutions to mitigate the issue. Such solutions are best marshalled by a network of regional experts who are already engaged in scientific and technological work in their respective areas.

The Collaborative Agreement between Universiti Kebangsaan Malaysia (UKM) and the Cambridge Malaysian Education and Development Trust and Malaysian Commonwealth Studies Centre (CMEDT/MCSC) signed on 19 November 2013 to establish ANCST, provided support for (i) administrative functions; (ii) promotion of disaster prevention and climate resilience in Asia through collaborative capacity building and outreach programmes; (iii) academic and research activities through staff exchanges and collaborations of common interests; and (iv) facilitation of student exchanges to enhance awareness and strengthen ties between the institutions. The robust structure of ANCST (Annex 1), which has underpinned its remarkable progress was conceived by principal partners and key players in the region from two international workshops, organised under the aegis of UKM and CMEDT/MCSC, the first in Bangalore, India (July 2011) and the second in Bangi, Malaysia (November 2012).

ANCST facilitates collaboration and exchange of information between researchers engaged in scientific and technological aspects of climate science, climate change, natural disasters, as well as associated impacts, adaptation and solution pathways specific to Asian conditions and phenomena. This is done from its base at UKM's Southeast Disaster Prevention Research Initiative (SEADPRI-UKM), with support from world-class Commonwealth institutions in Cambridge (Cambridge's Centre for Climate Change, DAMTP, ACOPS), Hong Kong (Guy Carpenter Asia-Pacific Climate Impact Centre at the City University) and India (Indian Institute of Science Bangalore & Indian Institute of Technology Delhi). Prominent Asian experts lead Special Topic Groups that constitute the core of ANCST at the regional level, marshalling members from multiple disciplines and age cohorts in Asia on clearly defined topics related to climate science and technology.

Special Topic Groups (STG) led by prominent Asian experts bring ANCST Members together by convening workshops and training courses, conducting joint research, exchanging research findings and laying the foundation for creation of common data bases. These currently include:

- STG on **Disaster Prevention and Climate Resilience**, led by Professor Rajib Shaw, Keio University, Japan;
- STG on **Atmospheric Composition and Climate Change**, led by Professor Mohd Talib Latif, Universiti Kebangsaan Malaysia;
- STG on **Climate Change, Floods and Anthropogenic Activities**, led by Professor Zulkifli Yusup, Universiti Teknologi Malaysia;
- STG on **Urban Meteorology and Climate**, led by Professor Johnny Chan & Prof. Jimmy Fung, Hong Kong;
- STG on **Asian Atmosphere- Ocean Processes**, led by Professor Manju Mohan, Indian Institute of Technology Delhi; and
- STG on **Young Professionals in DRR and Climate Change**, led by Dr. Nurfashareena Muhamad, SEADPRI-UKM.

2.0 Achievements

2.1 Administrative Functions

Since its establishment, key members of the ANCST International Steering Committee (Annex 2) have met informally in the margins of technical workshops to plan and monitor the high level of activities conducted in the region. Members of the ANCST International Advisory Committee (Annex 3) periodically provide guidance and strategic inputs to expand the influence of the network in the region. Annual reports have been prepared with detailed financial statements and copies of receipts of expenditure and submitted to the CMEDT/MCSC. The abridged version of the annual report is available on the website.

In 2019, two meetings were held with Dr Anil Seal, Director of CMEDT/MCSC to report progress and planning of activities. The meetings were held with on 31 July 2019 and 25 September 2019 in Cambridge, United Kingdom.

2.2 Capacity Building and Outreach

There are now six operational Special Topic Groups of ANCST. The ANCST meeting on 15 November 2018 proposed the establishment of a **new STG on Young Professionals in DRR and Climate Change** to link youths and young professionals in the region. The STG is intended to provide a platform for youth, young professionals and early career researchers involved in climate change and disaster risk reduction, to be found by senior researchers in Asia, to advance beneficial linkages between these two cohorts in Asia. Hence, the STG encompasses existing networks and regional initiatives driven by youth and young professionals. The ANCST Workshop held in October 2019, in conjunction with the Asia-Pacific Network for Global Change Research (APN), the International Science Council Regional Office for Asia and the Pacific (ISC-ROAP), UNESCO, UNDRR Asia-Pacific Science, Technology and Academia Advisory Group (APSTAAG) and other key parties, stressed the important **role of young people in the region in building climate and disaster resilience and the need to connect various ongoing initiatives**. ANCST is now providing leadership in bridging the platforms to further empower youths, young professionals and early career researchers in the region through the STG on Young Professionals in DRR and Climate Change, led by Dr. Nurfashareena Muhamad (http://ancst.org/special-topic-group-on-young-professionals-in-drr-and-climate-change/).

Since its establishment ANCST has **assembled over 1600 scientists in Asia**, comprising researchers, policy-makers, private sector practitioners and early career researchers. This was accomplished in partnership with key national and regional partners, **through 42 workshops** and associated events. With six Special Topic Groups, ANCST is now in a better position to enhance connectivity between scientists of multiple disciplines and age cohorts working on climate issues in Asia. Key climate science and technology topics advanced by ANCST include monsoon dynamics, land-sea interactions, climate change effects on the urban environment, and climate-driven disaster risk reduction and resilience.

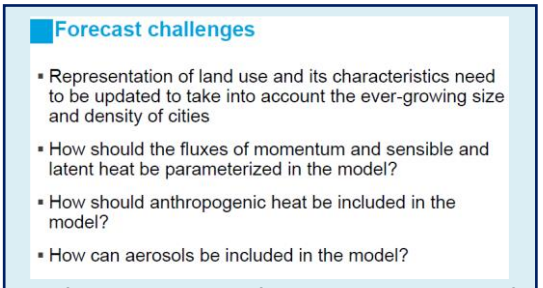
In 2019, ANCST implemented **eight events** with multiple partners involving some **783 participants from 34 countries** comprising researchers, policy-makers, private sector practitioners and early career researchers in partnership with key national and regional partners. The 2nd Workshop on Asian Urban Meteorology and Climate, convened by Prof. Johnny Chan & Prof. Jimmy Fung, Leaders of STG on Urban Meteorology and Climate, scheduled on 17-19 October 2019 in Hong Kong had to be cancelled a few weeks before the event due to social unrest in the territory. Notwithstanding, this marked a landmark year for ANCST, which saw **increased engagement with scientists from the Asia Pacific as well as early career researchers from Asia and the Western Pacific Islands**. The events have contributed to disseminate policy relevant information on climate science and technology. The workshop reports and presentation material are available on the ANCST website and several have been published. Highlights include the following:

- **Workshop on Modelling Atmospheric-Oceanic Processes for Extremes (MAPEX 2019), 21-22 Mac 2019, New Delhi**: Convened by ANCST STG Leader Prof. Manju Mohan of IIT Delhi, the workshop featured experts from Bangladesh, China, Indonesia, India, Japan, Malaysia, Saudi Arabia, Singapore and Thailand. The focus was to better understand the operational needs for predicting extreme weather events and streamline research to support such requirements to enhance effectiveness (http://ancst.org/wp-content/uploads/2019/07/MAPEX-Report_2019-05-16_Final.pdf). The workshop made a strong call for increasing collaborative research, capacity building and communication to bridge the gap between research and operations and emphasised the need for improved forecasting at the city level, particularly for extreme weather events.

- **Forum on the IPCC Special Report on 1.5°C: Implications for Southeast Asia (Forum SEADPRI 2019 @ ASM), 25 April 2019, Academy of Sciences Malaysia, Kuala Lumpur**: The forum featured Professor Mark Howden, Director of the Climate Change Institute, Australian National University, who presented key findings of the IPCC Special Report on Global Warming of 1.5°C (https://www.ipcc.ch/sr15/). The pathways to limit global warming to 1.5°C were highlighted. This is important for tropical Southeast Asia, which is projected to experience the largest impacts on economic growth. Compared to a warming of 2°C, limiting warming to 1.5°C is expected to contribute to less extreme weather where people live, including lessening extreme heat and rainfall as well as other benefits.

- **Atmospheric Composition and Asian Monsoon Workshop (ACAM 2019), 26-28 June 2019, UKM, Bangi**: Convened by ANCST STG Leader Prof. Mohd Talib Latif of UKM, the 3rd ACAM Training School on 24-25 June 2019 was hosted by ANCST prior to the Workshop. The training involved a total of 36 young scientists from Bangladesh, China, France, Germany, Iran, Indonesia, India, Malaysia, Nepal, Pakistan, Philippines, South Korea, Taiwan and Vietnam (http://ancst.org/wp-content/uploads/2020/01/STG-on-Atmospheric-Composition-and-Climate-Change-ANCST-1.pdf). The training focused on atmospheric composition data analysis using satellite data from MODIS, The Copernicus Atmosphere Monitoring Service (CAMS), Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation (CALIPSO) and IASI dataset.

- **Workshop on City Scale Modelling in the Tropics, 3-4 July 2019, Putrajaya**: ANCST was a collaborator of this workshop, which was convened and totally funded by project partners of the Newton Ungku Omar (NUOF) under the leadership of the Malaysian Meteorology Department. Keynote addresses were delivered by Prof. Johnny Chan and Prof. Pereira of ANCST. The workshop involved about 100 participants from India, Malaysia, Singapore and the UK. Prof. Mike Davey also delivered a paper remotely from University of Cambridge.



Prof. Johnny Chan of the City University of Hong Kong concluded his keynote address at the workshop in July 2019 with several key challenges to improve city scale modelling in the tropics.

- **Launch of U-Inspire Malaysia at the Second National Conference on Science, Technology and Innovation for Disaster Risk Reduction, 14-15 October 2019, Kuala Lumpur**: ANCST STG Leader Dr. Nurfashareena Muhamad of SEADPRI-UKM played a key role in the incubation of U-INSPIRE Malaysia@UKM, a platform that aims to mobilise the youth and young professionals involved in disaster risk reduction and climate change, which was launched on 15 October 2019. The launch was held at the Second National Conference to enable U-INSPIRE Malaysia to get a very high profile among disaster risk stakeholders in the country. The launch was also attended by representatives of U-INSPIRE networks in Indonesia, India, Pakistan, Nepal and The Philippines, who shared work ongoing in their respective countries. This was an excellent opportunity for the STG on Young Professionals in DRR and Climate Change to expand its network in the region. Hosted under the auspices of ANCST (http://ancst.org/wp-content/uploads/2020/02/FINAL_Bul19-pages-16.pdf) U-

INSPIRE Malaysia@UKM will work closely with the National Disaster Management Agency (NADMA Malaysia), Academy of Sciences Malaysia (ASM) and the UNESCO Regional Science Bureau for Asia and the Pacific.

- **Workshop on Building Disaster and Climate Resilience in Cities, 15-16 October 2019, Kuala Lumpur:** Led Prof. Julian Hunt and Prof. Pereira of ANCST in conjunction with APN and ISC-ROAP, the workshop was jointly organised with other partners including the Newton Ungku Omar (NUOF) Project Members. The purpose was to take stock of new scientific knowledge and marshal research to expand the coverage of information on tropical cities and lay the foundation for supporting the IPCC Special Report on Climate Change and Cities. It was also an opportunity to launch a key output of the NUOF Project, the Kuala Lumpur Multi-hazard Platform. Experts from 14 countries shared the latest findings on multiple dimensions of cities covering modelling of geophysical and atmospheric hazards, pathways for building disaster resilience and strengthening resilience of critical infrastructure (http://ancst.org/wp-content/uploads/2020/01/FINAL_Bul19_8-8.pdf). Early career researchers were exclusively targeted as participants and a few were selected to present posters on their ongoing work.

In his keynote address at the workshop on 15-16 October 2019, Professor Julian Hunt introduced the Kuala Lumpur Multi-hazard Platform, which is a product of the Newton Ungku Omar Fund project, jointly led by him and Professor Joy Pereira of SEADPRI-UKM.

- **Workshop on IPCC Role, Activities and Findings, 26 October 2019, Academy of Sciences, Kuala Lumpur**: Led by Prof. Pereira, the workshop comprised three separate sessions targeting the media, scientists and policy makers as well as youths and young professionals. The IPCC delegation in Kuala Lumpur was led by the Chair, Professor Hoesung, who was accompanied by the WGI Co-Chair, Professor Valerie Masson-Delmotte (France) and WGIII Co-Chair, Professor Jim Skea (UK) as well as WGIII Vice-Chair, Mr Amjad Abdulla (Maldives). The session for youths and young professionals was led by STG Leader Dr. Nurfashareena Muhamad of SEADPRI-UKM, with support from U-INSPIRE Malaysia@UKM and the Malaysian Youth Delegation (http://ancst.org/wp-content/uploads/2020/01/FINAL_Bul19_9-9.pdf). The focus was to encourage the contribution of youth and young professionals towards the IPCC reporting processes in the region, especially in reviewing the IPCC reports. The involvement of Asian researchers, especially the youth and young professionals, in the IPCC Sixth Assessment Report (AR6) has been limited. In preparing the AR6, only 19% of the authors represent Asia compared to 34% of the authors who come from Europe.

- **Workshop and Dialogue: Key Findings of the IPCC & Bridging the Science & Technology Divide in the Pacific Islands, 14-15 Nov 2019, Suva, Fiji:** Led by Prof. Pereira and ANCST STG Leader Prof. Rajib Shaw of Keio University in conjunction with APN, ISC-ROAP, University of the South Pacific (USP), Secretariat of the Pacific Regional Environment Programme (SPREP) and other partners, the workshop was held to promote adequate coverage of the Pacific Islands in the IPCC Assessment Reports. The objective was to familiarize Pacific scientists with the IPCC process and engage with science institutions relevant to the IPCC in the Pacific Islands. Capacity was built specifically to provide input through the IPCC review process, familiarise scientists with the process of writing peer reviewed papers and build an awareness of regional science institutions linked to the IPCC. A total of 55 participants from 8 countries, including five universities operating in the Pacific Islands of Fiji, Solomon Islands and Samoa attended the event (http://ancst.org/wp-content/uploads/2020/01/FINAL_Bul19_10-10.pdf). The participants also submitted their comment to the IPCC under the name of Pacific Islands Climate Research Group.

2.3 Academic and Research Activities

Targeted high level science-policy interfacing is critical for strengthening linkages with key strategic partners to influence regional research priorities and facilitate development of regional initiatives. High level science-policy interfacing has enabled ANCST to contribute to the mainstreaming of policy relevant solutions for building climate resilience in the region. This has been augmented by the involvement of ANCST in informal discussions at international platforms and institutions for climate change and disaster risk reductions. Since establishment, targeted science-policy interfacing with regional and global institutions has resulted in four major collaborative projects worth over £2.2 million from external sources, where the role of ANCST is to provide the pathway for enhanced regional synergies.

In 2019, ANCST **maintained its high profile and extended its reach to the Pacific, facilitating the advancement of science, technology and innovation to support the IPCC Sixth Assessment Report, Sendai Framework on Disaster Risk Reduction and Paris Agreement.** This was achieved by jointly organising events and collaborative initiatives with multiple partners from the region and interfacing with new entities in various high-level meetings. Such interaction has yielded in the recently acquired project from the International Development Research Centre (IDRC) Canada Project with a value of about £280,000 over 3 years, led by Professor Joy Pereira with Professor Julian Hunt as an Advisory Committee Member providing oversight. The project involves building female social entrepreneurship for managing disaster and climate risks, where ANCST is the conduit for outreach. In 2019, science-policy interfacing was conducted at high-level meetings convened by the IPCC in Cambodia, Myanmar and Kazakhstan, among others as well as events of the Chinese Academy of Sciences and the STS forum (which is viewed by some scientists as the S&T equivalent to the World Economic Forum).

Publications by key members of ANCST include research articles and workshop reports. Reports of events are also uploaded to the ANCST website (http://www.ancst.org/) to enhance outreach. The Springer publication on Climate Change Adaptation in Southeast Asia is expected next year.

In 2019, ANCST published the findings of the high profile Workshop on Status of Climate Science and Technology in Asia, held on 15-16 November 2018 in Kuala Lumpur, which was led by ANCST and IPCC with APN, ISC-ROAP and partners. The workshop report was an annex to the Progress Report on Communication and Outreach Activities, submitted to over 180 Governments by the Secretary of the IPCC at its Forty-Ninth Session in Kyoto, Japan, 8 – 13 May, 2019 [IPCCXLIX/INF. 9 (12.IV.2019) Agenda Item: 6.9].

PUBLICATIONS

- Pereira, J. J. & Hunt, J.C.R. (eds). 2019. Climate Science & Technology in Asia: Current Status and Future Needs. Report of the Workshop on Status of Climate Science and Technology in Asia, 15-16 November 2018, Kuala Lumpur, Malaysia. LESTARI Publisher, Bangi, Malaysia (shared with over 180 governments of the IPCC)
- Pereira, J. J., Nurfashareena M., Sian. L. C., Aziz, S., Hunt, J.C.R. 2019. Making Cities Disaster Resilient in a Changing Climate: The Case of Kuala Lumpur, Malaysia. IRDR Working Paper Series, 1-17.
- Wang, K., Aktas, Y.D., Stocker, J., Carruthers, D., Hunt, J.C.R., Malki-Epshtein, L. 2019. Urban heat island modelling of a tropical city: case of Kuala Lumpur. Geoscience Letters 6, 4.
- Pereira, J.J., Pulhin, J. M., Nyda, C., Tran Dinh Trong, Khadijah, S. 2019. Appraising slow onset hazards for loss and damage: Case studies in Southeast Asia. APN Science Bulletin, 9(1): 45-51.

The Conference on Flood Catastrophes in a Changing Environment II (CFCCE' II-2018), held on 15-18 November 2018 in Nanjing, China, led by ANCST STG Leader Professor Zulkifli Yusup of Universiti Teknologi Malaysia and the Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences, which follows on from the inaugural event held in 2016 in Malaysia, has resulted in an open access Scopus indexed publication.

The **ANCST Website Portal** (http://www.ancst.org/), which serves as a central resource for current, accurate and accessible information on climate science and technology has received over 635,179 visitors.

The **ANCST Bulletin Board** sent out several calls for expert review by the IPCC, participation in workshops and training for early career researchers. The STG Leaders generally availed themselves to this service to enhance communication with scientists in the region.

The **ANCST Database** currently contains the contact information of about 1500 experts and policy-makers working on climate science and disaster resilience in Asia. Events convened by ANCST provide an opportunity to grow its membership and expand the database.

2.4 Malaysia Window to Cambridge at UKM: The Legacy

The additional funding provided by the Cambridge Malaysian Education and Development Trust, in association with the Malaysian Commonwealth Studies Centre (MCSC/CMEDT) for the "Malaysia-Window-to-Cambridge at UKM" programme for two years (2017-2018) unearthed a talent pool of some 80 high-calibre "ANCST Young Scientists" in Asia, where many benefitted from Cambridge researchers through training workshops and events held primarily in the region. The Director of the MCSC/CMEDT, Dr. Anil Seal provided the additional funds with a vision to identify the future "stars" in the region, with potential to helm climate science and technology for disaster prevention and continue the quest for a resilient Asia.

Dr. Nurfashareena Muhamad of SEADPRI-UKM is an ANCST Young Scientist who attended the summer school program in Cambridge under the Malaysia Window to Cambridge programme. She leads the STG on Young Professionals in DRR and Climate Change. In 2019, she incubated and established U-Inspire Malaysia and linked with other ANCST Young Scientists in the region to further empower youths, young professionals and early career researchers through the STG on Young Professionals in DRR and Climate Change. She is also forging linkages with the Pacific Islands to increase the number of ANCST Young Scientists. The STG is currently expanding its reach in the Asia Pacific by leveraging on ANCST initiatives and securing additional funding from multiple sources to conduct future activities. The seed-funding provided by the MCSC/CMEDT has delineated several young stars that are now growing the legacy of ANCST in the region.

The success of the "Malaysia-Window-to-Cambridge at UKM" programme attracted the attention of several parties. The APN and ISC-ROAP have committed funds to work with ANSCT to support the IPCC AR6 cycle and enhance contribution to the corpus of knowledge on climate science and technology in the region. In 2019, this was done by bringing together scientists to share current knowledge and technology on climate change, disaster risk reduction and their interactions with sustainable development, and linking authors working on the IPCC AR6 cycle to early career scientists in Asia and the Pacific via workshops held in Kuala Lumpur and Suva. The product of the collaboration include workshop reports and peer-reviewed journal articles produced by the early career scientists. In addition, scientists from Central Asia, West Asia, Southeast Asia, Hindu-Kush Region (South Asia) and the Pacific Islands have become more engaged in the IPCC process as expert reviewers, improving the scientific coverage of these sub-regions in the IPCC AR6 cycle.

Given the success of the of the initiative, plans are being considered to institutionalise the Malaysia Window to Cambridge within UKM and build on the pioneering work of ANCST with the establishment of a Cambridge Chair at UKM. The proposed Cambridge Chair at UKM will enhance the global image of University of Cambridge and Universiti Kebangsaan Malaysia as research collaborators in building resilience to climate change and natural disasters, under patronage of CMEDT/MCSC. It is envisaged that the CMEDT/MCSC will serve as the gateway to entities in Cambridge and the UK (Oxford, University College London, British

Geological Survey, the UK Met Office, etc.) while SEADPRI-UKM will serve as the gateway to Malaysia (i.e. University of Malaya, Universiti Teknologi Petronas, etc.) as well as ASEAN and the Commonwealth in Asia Pacific, drawing on the linkages of ANCST. Topics covered will build on the existing strength of ANCST in climate science and technology to build disaster resilience.

The Cambridge Chair is intended to support two-way exchanges of distinguished academics and researchers and serve as a gateway to Cambridge and the UK. Focus will also be given to strengthen capacity of early career scientists in Malaysia and the region in skills related to atmospheric science, geophysical hazards, risk reduction and science communication, to build resilience to climate change and natural disasters. In the long-term, the aspiration is to expand the influence of both University of Cambridge and UKM in the region by bridging the knowledge gap between climate science and policy to support governance, economics and social innovation, building on the pioneering work of the Asian Network on Climate Science and Technology (ANCST) and the success of the Malaysia Window to Cambridge within UKM.

Discussion on this matter is still ongoing with the MCSC/CMEDT and the management of UKM. During the meeting with MCSC/CMEDT, the need to identify interested parties for this initiative, particularly among researchers and academics from Cambridge (and the UK) was emphasised. This is to facilitate the Malaysian side in securing multiple funding sources from within the country, based on the availability of expertise for the proposed Cambridge Chair at UKM. The mechanism to get this work started is through the appointment of one or two academics from UKM as Fellows of the MCSC/CMEDT, to enable them to serve as dedicated UKM linkages in Cambridge and do the necessary groundwork for the proposed Cambridge Chair at UKM. It was also proposed that the collaborative agreement between UKM and the CMEDT/MCSC be extended till 2025 to facilitate this process. In addition, a proposal for convening a discourse on Islamic Environmental Stewardship in a 1.5°C world was submitted to CMEDT/MCSC for consideration. During Professor Hunt's visit to Malaysia in 2019, the briefing to the UKM management was postponed as the recently appointed Vice-Chancellor was away.

Legacy of the Malaysia Window to Cambridge - ANCST Young Scientists, who linked to the IPCC in the following initiatives:

- Individual Review Submission to the WG II AR6 Report by several ANCST Young Scientists, which can be verified after the IPCC makes the information public.
- Expert Review Submission to Chapter 15 of the WG II AR6 Report from the Pacific Islands Climate Research Group, comprising 26 participants, where the point of contact is a young scientist from Tonga.
- Forum on the Special IPCC Report on 1.5°C: Implications for Southeast Asia, 25 April 2019, with two IPCC WG II Vice-Chairs, involving 49 Malaysian participants including several ANCST Young Scientists.
- Workshop on Building Disaster and Climate Resilience in Cities, Kuala Lumpur, Malaysia, 15-16 October 2019, with an IPCC WG II Vice-Chair, four IPCC authors and six UNDRR APSTAAG experts, involving 141 participants from 14 countries including many ANCST Young Scientists.
- Workshop on IPCC Role, Activities and Findings, 26 October 2019, Academy of Sciences, Kuala Lumpur with a high-level delegation led by the IPCC Chair, Dr. Hoe-sung Lee, two Co-Chairs, two WG Vice-Chairs and author, involving 133 Participants from 12 countries as well as several ANCST Young Scientists.
- Workshop and Dialogue: Key Findings of the IPCC & Bridging the Science & Technology Divide in the Pacific Islands, University of South Pacific, Suva, Fiji, 14-15 Nov 2019, with an IPCC WG Vice-Chair and three IPCC authors, involving 54 participants from 8 countries; including several new ANCST Young Scientists.

3.0 Work Plan for 2020 and Beyond

The ANCST work plan for 2020 is to continue the modus operandi of forging strategic alliances to leverage exponentially on the seed-funding provided by CMEDT/MCSC and conduct initiatives involving researchers, practitioners and decision-makers on key climate change issues. The work plan for 2020 is as listed below:

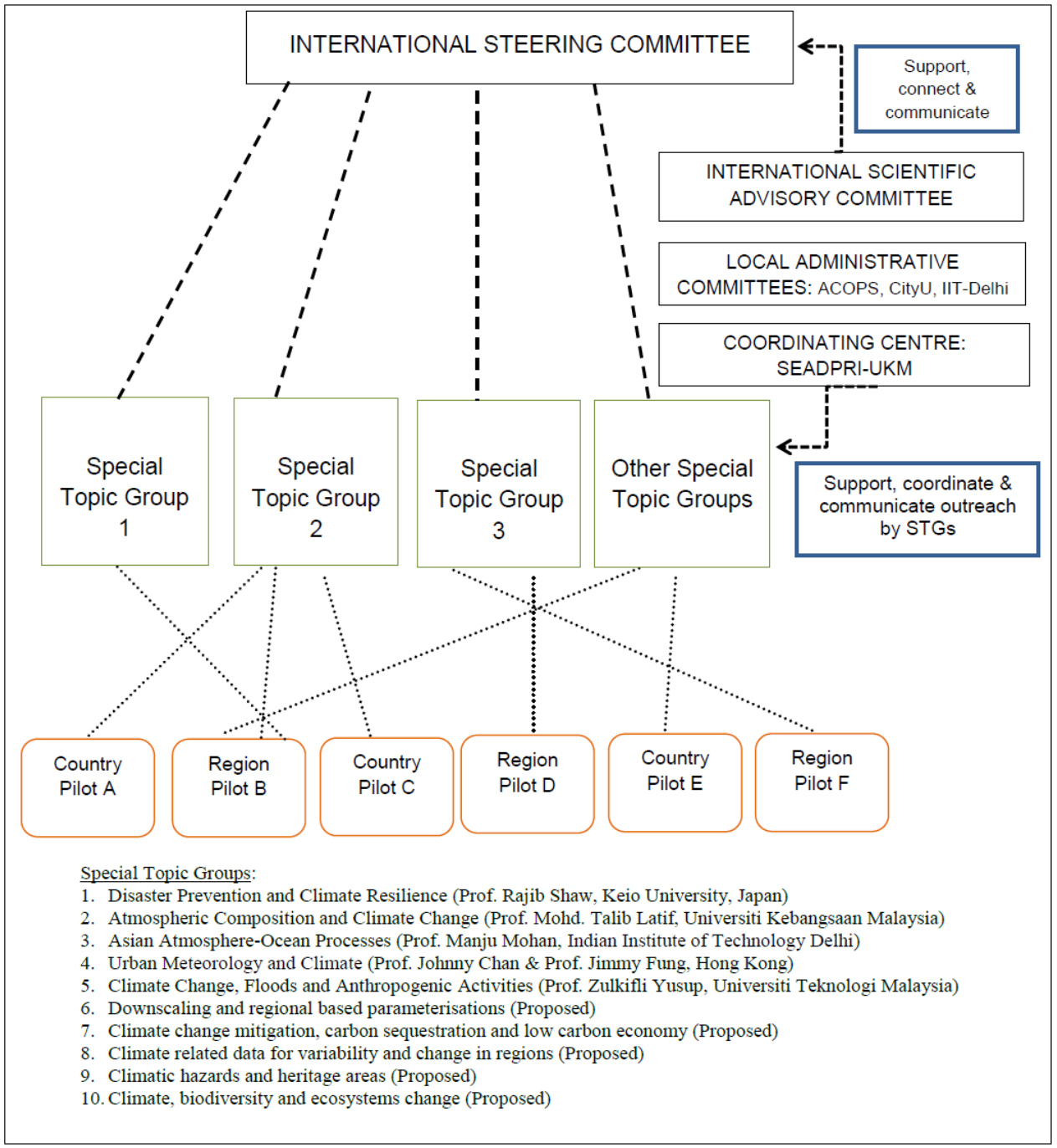
- Showcasing ANCST at the 3rd Asia Pacific Science and Technology Conference for DRR, hosted by the Government of Malaysia and UNISDR in Kuala Lumpur on 16-17 March 2020 by convening two Plenary Technical Sessions with partners as well as launching the U-Inspire Stage in the Asia Pacific, involving ANCST Young Scientists [Led by Prof. Pereira and Prof. Rajib Shaw, Leader of STG on Disaster Prevention and Climate Resilience as well as Dr. Nurfashareena Muhamad, Leader of STG on Young Professionals in DRR and Climate Change];
- ANCST participation at the Asia Pacific Ministerial Conference on DRR scheduled on 29 June – 2 July 2020 in Brisbane; [Led by Prof. Rajib Shaw, Leader of STG on Disaster Prevention and Climate Resilience];
- Continuous improvement of the ANCST website to highlight products of the Newton Ungku Omar Fund project and serve as a forum between scientists and policy-makers in the region;
- Growing of ANCST membership via its workshops and periodic email blasts to various other networks;
- Monthly issuance of the ANCST Bulletin with information on opportunities on training, research and publication as well as IPCC's call to review the reports;
- Publication of manuscripts from ANCST events and targeted science-policy interfacing focusing explicitly on securing support for activities in 2021 and beyond.
- Groundwork to establish a Cambridge Chair at UKM to enhance the global image of University of Cambridge and Universiti Kebangsaan Malaysia as research collaborators in building resilience to climate change and natural disasters, through ANCST and the Malaysia Window to Cambridge at UKM, under patronage of the CMEDT/MCSC. The Cambridge Chair is intended to support two-way exchanges of distinguished academics and researchers, with the CMEDT/MCSC serving as the gateway to entities in Cambridge and the UK and SEADPRI-UKM being the gateway to Malaysia, ASEAN and the Commonwealth in Asia.

The ANCST work plan for 2021 and beyond will rely on innovative business models. A model to be explored that could benefit ANCST is in the next phase of the Newton-Ungku Omar Fund project, specifically in commercialising the Kuala Lumpur Multi-hazard platform, focusing on cities in Malaysia and ASEAN. Funds will also be sourced from external parties for the proposed Cambridge Chair at UKM to enhance the global image of University of Cambridge and UKM as research collaborators in building resilience to climate change and natural disasters, drawing on the success of ANCST and the Malaysia Window to Cambridge at UKM.

The coverage of climate related issues will be broadened to improve integration of climate and disaster risks in cities as well as facilitation of mitigation actions that yield effective adaptation co-benefits. There will be special focus on advancing social entrepreneurship in climate risk reduction, in addition to activities that further enhance the profile of ANCST and growing its membership. Special Topic Groups will be established on climate extremes and coastal cities; green technology for water, forestry and urban settlements; ocean-atmosphere dynamics; data centres coordination; transboundary hazards; climate extremes and heritage sites; biodiversity and mountain ecosystems; and governance and its complexities.

Annex 1

Organisation of ANCST [Revised 24 May 2017]



Special Topic Groups:

1. Disaster Prevention and Climate Resilience (Prof. Rajib Shaw, Keio University, Japan)
2. Atmospheric Composition and Climate Change (Prof. Mohd. Talib Latif, Universiti Kebangsaan Malaysia)
3. Asian Atmosphere-Ocean Processes (Prof. Manju Mohan, Indian Institute of Technology Delhi)
4. Urban Meteorology and Climate (Prof. Johnny Chan & Prof. Jimmy Fung, Hong Kong)
5. Climate Change, Floods and Anthropogenic Activities (Prof. Zulkifli Yusup, Universiti Teknologi Malaysia)
6. Downscaling and regional based parameterisations (Proposed)
7. Climate change mitigation, carbon sequestration and low carbon economy (Proposed)
8. Climate related data for variability and change in regions (Proposed)
9. Climatic hazards and heritage areas (Proposed)
10. Climate, biodiversity and ecosystems change (Proposed)

Annex 2

ANCST International Steering Committee: Terms of Reference and Members

Introduction

The **Asian Network on Climate Science and Technology (ANCST)** is funded by the Cambridge Malaysian Education and Development Trust (CMEDT) and Malaysian Commonwealth Studies Centre (MCSC), with the Southeast Asia Disaster Prevention Research Initiative of Universiti Kebangsaan Malaysia (SEADPRI-UKM) serving as the Coordinating Centre. ANCST was formally launched on 19 November 2013 in Putrajaya, Malaysia.

Dedicated to science, technology and innovation with application to disaster and climate resilience, ANCST brings together academics and researchers from various disciplines to a multidisciplinary platform to strengthen their capacity, while simultaneously interacting with other multi-stakeholder networks, intergovernmental bodies and multi-lateral institutions operating in the region. ANCST does this with the support of various academic and research institutions in Asia, including the City University of Hong Kong, Divecha Centre for Climate Change, IIT-Bangalore and University of Malaya, among others.

The organisation of ANCST comprises an International Steering Committee, International Scientific Advisory Committee, Local Administrative Committee, Coordination Centre, National Platforms or Pilot Centres and Special Topic Groups (see figure). Application for institutional and individual membership can be submitted directly to the Coordination Centre at SEADPRI-UKM or via a national organisation serving as the platform or pilot centre.

Terms of Reference

The International Steering Committee is responsible for developing ANCST programmes including outreach and collaboration with other networks. Members of the International Steering Committee are prominent scientists in the field of climate science and technology. The International Steering Committee is an entirely voluntary commitment so there is no explicit workload requirements, beyond reasonable expectations of discharging the activities detailed in these terms of reference or efforts volunteered and documented in agreed meeting notes. The International Steering Committee will communicate primarily through teleconferences and emails at least on a quarterly basis. The function of the Committee is as follows:-

- Identify flagship themes for meetings and collaboration, and promote collaboration and co-funding (where possible and appropriate) with other networks;
- Conduct programmes recommended by the membership and International Scientific Advisory Committee, where relevant and financially viable;
- Plan and organise a reasonable number of meetings, academic conferences and workshops conducted under the auspices of ANCST;
- Secure funding for a reasonable number of young researchers to attend strategic science workshops;
- Promote ANCST to peers and provide scientific oversight and technical input to the National Platforms and Special Topic Groups under its oversight;
- Review the ANCST website and annual reports prepared by the Coordination Centre.

Members

The International Steering Committee is responsible for developing ANCST programmes including outreach and collaboration with other networks. Members of the International Steering Committee are as follows:-

- Prof. Joy Jacqueline Pereira, Southeast Asia Disaster Prevention Research Initiative, Universiti Kebangsaan Malaysia (SEADPRI-UKM)
- Prof. Johnny Chan, School of Energy and Environment, City University of Hong Kong
- Prof. Manju Mohan, Indian Institute of Technology, Delhi
- Emeritus Prof. Lord Julian Hunt, Advisory Committee on Protection of the Sea (ACOPS)
- Prof. J. Srinivasan, Indian Institute of Science, Bangalore
- Prof. Jun Matsumoto, Tokyo Metropolitan University
- Prof. Jianping Wu, Tsinghua University, China
- Prof. Rizaldi Boer, Centre for Climate Risk and Opportunity Management in Southeast Asia and Pacific (CCROM-SEAP), Bogor Agricultural University

Annex 3

ANCST International Scientific Advisory Committee: Terms of Reference and Members

Introduction

The **Asian Network on Climate Science and Technology (ANCST)** is funded by the Cambridge Malaysian Education and Development Trust (CMEDT) and Malaysian Commonwealth Studies Centre (MCSC), with the Southeast Asia Disaster Prevention Research Initiative of Universiti Kebangsaan Malaysia (SEADPRI-UKM) serving as the Coordinating Centre. ANCST was formally launched on 19 November 2013 in Putrajaya, Malaysia.

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Terms of Reference

The International Scientific Advisory Committee comprises internationally renowned experts in the fields relevant to climate science and technology. Members of the International Scientific Advisory Committee are appointed for a period of 3 years. Termination of membership during this period is by mutual consent. Members are expected to take active part in the development of ANCST and communication is primarily via email. The function of the Committee is as follows:-

- Provide strategic advice to the International Steering Committee, based on international trends and scientific development within the field of climate science and technology;
- Provide inputs on programmes that are proposed by the membership as well as the International Steering Committee, National Platforms or Pilot Centres and Special Topic Groups;
- Review and recommend changes in the overall goal and organisational structure of ANCST to accommodate emerging needs and changes during implementation of programmes;
- Propose interaction with multi-stakeholder networks, intergovernmental bodies and multi-lateral institutions operating in the region, to bridge the science-policy interface;
- Review annual progress reports and recommend partners and members to further strengthen ANCST in the region.

Members

The International Scientific Advisory Committee comprises internationally renowned experts in fields relevant to climate science and technology. Members of the International Scientific Advisory Committee are as follows:-

- Prof. Datuk Azizan bin Hj. Abu Samah, National Antarctic Research Centre, University of Malaya
- Prof. Alfredo M.F.A. Lagmay, National Institute of Geological Sciences, University of The Philippines
- Dr. Saleemul Huq, International Institute for Environment and Development (IIED)
- Prof. Anand Patwardhan, Shailesh J. Mehta School of Management, Indian Institute of Technology Bombay
- Dr. Matthias Roth, Department of Geography, National University of Singapore
- Dr. Louis Lebel, Faculty of Social Science, Chiang Mai University
- Dr. Yihui Ding, National Climate Center, China Meteorological Administration
- Prof. Ngar-Cheung Gabriel Lau, Institute of Environment, Energy and Sustainability, The Chinese University of Hong Kong
- Prof. Dr. Taroh Matsuno, Japan Agency for Marine-Earth Science and Technology (JAMSTEC)